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New Nouveau
Brunswick

Natural Resources
Minerals, Policy and Planning

Mineral Resource Report

New Brunswick's Mineral Industry 2002

Edited by
Barbara M.W. Carroll

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Mineral Resource Report 2003-3

New Brunswick's Mineral Industry 2002

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Department of Natural Resources
Province of New Brunswick

Hon. Keith Ashfield
Minister of Natural Resources

March, 2004

New Nouveau
Brunswick

Natural Resources
Minerals, Policy and Planning

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MINERALS, POLICY AND PLANNING DIVISION

Fredericton Office (1350 Regent St., Fredericton)
P.O. Box 6000, Fredericton, N.B. E3B 5H1
Telephone: (506) 453-2206
Fax: (506) 453-3671
E-mail: linda.dipaolo@gnb.ca
Internet: http//www.gnb.ca/0078/minerals/

Bathurst Office (495 Riverside Dr., Bathurst)
P.O. Box 50, Bathurst, N.B. E2A 3Z1
Telephone: (506) 547-2070
Fax: (506) 547-7694
E-mail: nicole.cormier@gnb.ca

Sussex Office (207 Picadilly Rd., Sussex)
P.O. Box 5040, Sussex, N.B. E4E 5L2
Telephone: (506) 432-2010
Fax: (506) 432-2060
E-mail: malcolm.mcleod@gnb.ca

ACKNOWLEDGEMENTS

Division staff and others who contributed sections to this report are:

B. Harris
Dr. S.R. McCutcheon
J.P. Langton
J. Walker
R. Wilson
M. Parkhill
D. Bérubé
M.J. McLeod
S. Johnson
L.R. Fyffe
C. St. Peter
A.G. Pronk
A.A. Seaman
M.P. Rennick
S. Merlini
B.M.W. Carroll
S.K. McEwan
C.J. Griggs
C. Neumann
J.J. Thibault
T.C. Webb
M.O'Donnell
R.D. Shaw
R. Phillips
D.J.J. Carroll
C.M. McNeill-Dobbelsteyn
D. Curtis
I. Scott
J. Hazen

D.J.J. Carroll prepared the graphs.

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SUMMARY

The Minerals, Policy and Planning Division of the New Brunswick Department of Natural Resources and Energy manages the mineral resources owned by the Crown. Responsibilities include conducting basic geoscientific studies, maintaining scientific and technical data to aid mineral exploration, developing mineral management policies, issuing licences and leases, administering acts and regulations related to minerals and mining, and monitoring mining activities. Staff geologists and engineers work with other government departments, companies, and organizations on matters related to forestry, environment, and construction. The division published approximately 86 maps and 36 reports in 2002.

The Recorder received 99 mineral exploration reports of work during 2002. Prospectors, and exploration and mining companies recorded 2118 claims, mainly in search of zinc, lead, copper, and gold.

The focus of exploration in northern New Brunswick was base metals. No major companies were active in this area during 2002. However, a number of junior exploration companies explored a number of properties. More than half of exploration expenditures in the north were reported by Heron Mines Ltd. and joint-venture partner Aurogin Resources Ltd. Drilling and trenching programs were carried out on a number of properties.

Gold was the focus of exploration in southern New Brunswick, especially in the Clarence Stream and Marrtown areas. Most activity was related to the expansion of resources on known gold properties and the search for new gold occurrences in the southwestern part of the province. Diamond drilling and trenching programs were carried out.

Drilling and seismic surveys were carried out near the McCully natural gas field. Production from McCully 1 and 2 wells is planned for early 2003 by Potash Corporation of Saskatchewan Inc. (PCS) and Corridor Resources Inc. Oil production testing is being continued in the Hillsborough area by Columbia Natural Resources Canada Limited. The Province has proclaimed an *Act to Amend the Oil and Natural Gas Act.*

During the year, there was one producing metal mine and approximately 90 producing nonmetal mines, including 44 peatlands and approximately 45 mineral aggregate pits and quarries on Crown and private land. One company was involved in coal production. Operations remained suspended at the Caribou and Restigouche mines (CanZinco Ltd.), the Murray Brook mine (Murray Brook Resources Inc.), the Lake George mine (APOCAN Inc.), and the Mount Pleasant mine (Adex Mining Inc.).

The value of New Brunswick's mineral production for 2002 was $652 284 987, a 19% decrease from the 2001 figure ($807 202 968). The value of production for fuels increased by 11% while the value of metal, nonmetal, and structural material production decreased by 24%, 10% and 4%, respectively. Compared to mineral production in other Canadian provinces, New Brunswick's production ranked first in zinc, lead, bismuth, antimony, and peat; second in potash; and third in silver and cadmium. New Brunswick is the only producer of marl.

SOMMAIRE

La Division des minéraux, des politiques et de la planification du ministère des Ressources naturelles et de l'Énergie du Nouveau-Brunswick est chargée de la gestion des ressources minérales de la Couronne. Parmi les responsabilités de cette division, on note les levés géoscientifiques de base, le maintien à jour des données scientifiques et techniques servant à la prospection minière, l'élaboration de politiques de gestion minière, la délivrance de permis et de baux, l'administration des lois et des règlements relatifs aux minéraux et aux mines ainsi que le contrôle des activités minières. Les géologues et les ingénieurs de la Division travaillent en étroite collaboration avec les autres ministères ainsi qu'avec les représentants d'entreprises et d'organismes, sur les questions relatives à la foresterie, à l'environnement et à la construction. En 2002, la Division des minéraux, des politiques et de la planification a publié environ 86 cartes et 36 rapports.

En 2002, l'archiviste aux mines a reçu 99 rapports de travaux d'exploration minière. Les prospecteurs miniers ainsi que les sociétés d'exploration et les sociétés minières ont jalonné un total de 2118 claims, surtout pour la recherche de zinc, de plomb, de cuivre et d'or.

La prospection, dans le Nord du Nouveau-Brunswick, était centrée sur les métaux de base. Aucune entreprise importante n'était active dans cette région en 2002. Cependant, un certain nombre de petites sociétés d'exploration minière ont prospecté des concessions. Plus de la moitié des dépenses de prospection dans le Nord ont été signalées par Heron Mines Ltd. et son coentrepreneur Aurogin Resources Ltd. Des programmes de forage et d'excavation ont aussi été exécutés sur un certain nombre de concessions.

L'or a, pour sa part, constitué le point de mire des travaux de prospection réalisés dans le Sud du Nouveau-Brunswick, plus précisément dans les secteurs du ruisseau Clarence et de Marrtown. La majeure partie de l'activité a été reliée à l'expansion des ressources des concessions aurifères reconnues et à la recherche de nouvelles venues d'or dans le Sud-Ouest de la province. Des programmes de forage et d'excavation ont été exécutés.

Des relevés sismiques et de forage ont été effectués près du champ de gaz naturel de McCully. L'entrée en production des puits McCully 1 et 2 est prévue pour le début de 2003 par Potash Corporation of Saskatchewan Inc. (PCS) et Corridor Resources Inc. Columbia Natural Resources Canada Limited poursuit des essais de production de pétrole dans le secteur d'Hillsborough. L'Assemblée législative a aussi adopté la *Loi modifiant la Loi sur le pétrole et le gaz naturel.*

Durant l'année, une mine métallique était productive ainsi que environ 90 mines non métalliques, y compris 44 tourbières et environ 45 carrières, gravières et sablières de granulat minéral situées sur des terres de la Couronne et des terrains privés. Une entreprise a produit du charbon. Les activités aux mines Caribou et Restigouche (CanZinco Ltd.), à la mine Murray Brook (Murray Brook Resources Inc.), à la mine de Lake George (APOCAN Inc.) et à la mine de Mount Pleasant (Adex Mining Inc.) sont toujours suspendues.

La valeur de la production de minéraux au Nouveau-Brunswick se chiffrait en 2002 à 652 284 987 $, ce qui représente une diminution de 19 % par rapport à sa valeur de 2001 (807 202 968 $). La valeur de la production de combustibles a augmenté de 11 %, alors que celle de la production de métaux, de métalloïdes et de matériaux de construction a diminué par 24 %, 10 % et 4 %, respectivement. Par rapport aux autres provinces canadiennes, le Nouveau-Brunswick se classe premier pour la production de zinc, de plomb, de bismuth, d'antimoine, et de tourbe; deuxième pour celle de potasse; et troisième pour celle d'argent et de cadmium. Le Nouveau-Brunswick est le seul producteur de marne au Canada.

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CHAPTER 1.
GOVERNMENT ORGANIZATION AND PROGRAMS

MINERALS, POLICY AND PLANNING DIVISION

Ellen Barry, Assistant DeputyMinister

The New Brunswick Department of Natural Resources and Energy is responsible for managing the province's mineral and energy resources. In addition, it is the provincial agency responsible for mineral and energy policy.

The Minerals, Policy and Planning Division (1) manages mineral and hydrocarbon exploration, mine development, mineral processing and mine reclamation and (2) promotes the mineral and hydrocarbon resource potential of the province, and encourages exploration and extraction. The mission of the division is to "identify and manage mineral and hydrocarbon resources and optimize their economic contribution while sustaining environmental quality."

The Mineral Policy released in December 1993 and the Policy on Peat Mining of November 2001 form the basis of government's commitment to the long-term management of mineral and hydrocarbon resources. The Department of Natural Resources and Energy provides the necessary resources for the development of each sector in a manner to both increase and sustain the economic value for present and future generations, whilst ensuring protection of the environment.

The Minerals, Policy and Planning Division consists of three branches: Geological Surveys, Mines, and Policy and Planning. Organizational changes are shown in Figures 1a to 1d.

Clientele of the Minerals, Policy and Planning Division are primarily (1) mineral and petroleum resource companies, consultants, associations, and other resource-related industries, and (2) government departments and agencies. In addition, staff provided direct advice into many government decisions on minerals and petroleum production and use at inter-provincial and national levels. The Division continues to subscribe to the objective of providing quality service to all clients, delivered in an efficient and cost-effective manner.

The 2002–2003 expenditures from the Division's A-base budget, from other provincial funds, and from federal/provincial agreements are summarized in Table 1 and Figure 2. Scientific, technical, administrative, and casual personnel employed by the Province in support of its mineral resources totalled 49 for 2002–2003.

In November of 2002, the Department of Natural Resources and Energy issued its Strategic Plan. This plan, which describes how the Department intends to focus its resources, was developed following examination of the broad economic, social and political situation along with the trends in the various resource sectors that would significantly affect the department's operation over the next 3 to 5 year planning horizon. Management of mineral resources was recognized as a "key result area" for the Department and three "strategic goals" were identified:

- To stimulate exploration in New Brunswick through the identification and promotion of mineral and hydrocarbon resources.
- To ensure that mineral and hydrocarbon resources are developed in a manner that is both responsible and fully beneficial to the economic and social needs of New Brunswickers.
- To provide and maintain a comprehensive geoscience database in order to attract exploration investment to New Brunswick.

Following the development of the Department's Strategic Plan, a number of initiatives were undertaken within the Division to meet the objectives of the plan. These include:

New Brunswick Department of Natural Resources and Energy

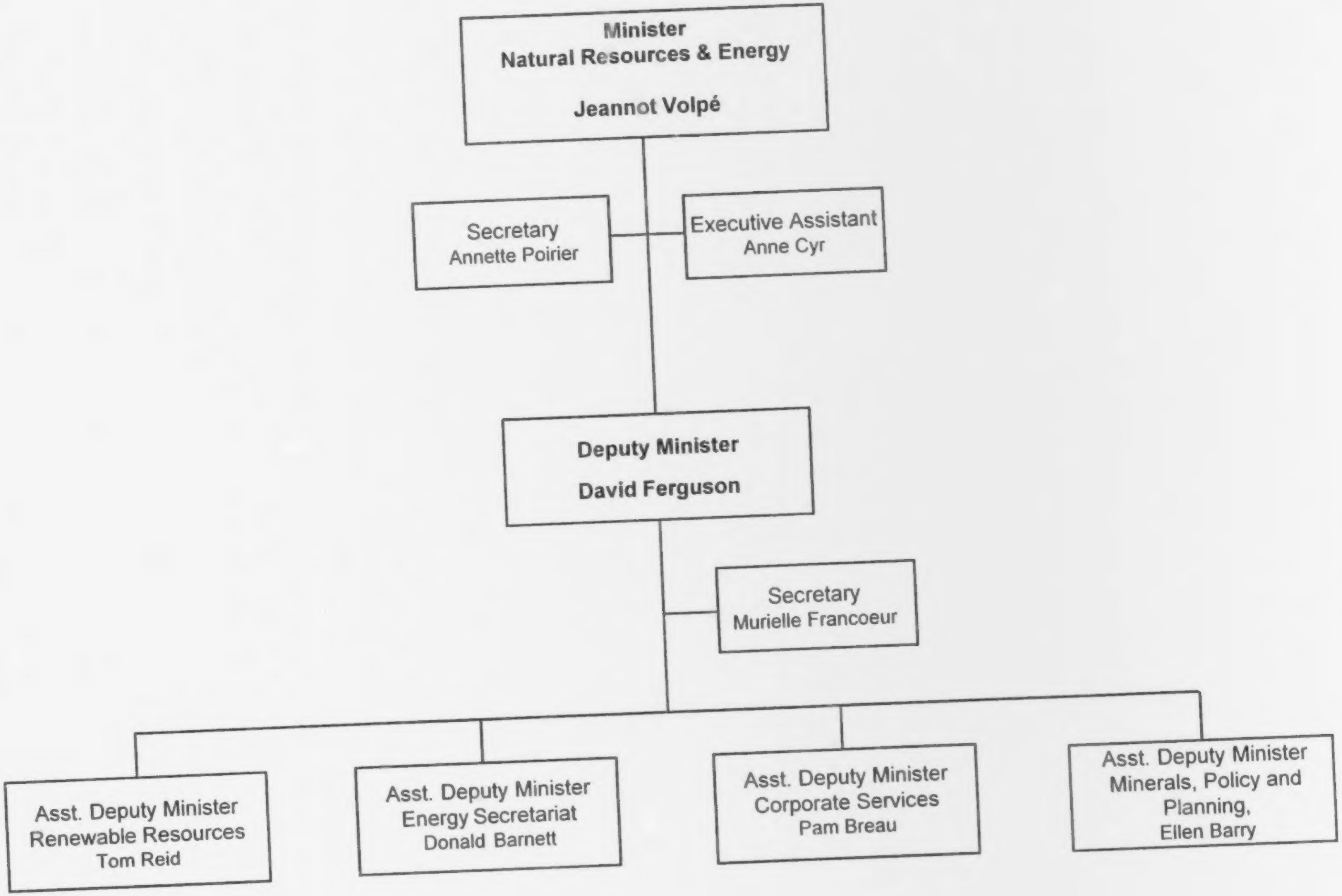

Minister
Natural Resources & Energy
Jeannot Volpé
Secretary
Annette Poirier
Executive Assistant
Anne Cyr
Deputy Minister
David Ferguson
Secretary
Murielle Francoeur
Asst. Deputy Minister
Renewable Resources
Tom Reid
Asst. Deputy Minister
Energy Secretariat
Donald Barnett
Asst. Deputy Minister
Corporate Services
Pam Breau
Asst. Deputy Minister
Minerals, Policy and
Planning,
Ellen Barry

Figure 1a. Organization chart for the New Brunswick Department of Natural Resources and Energy (December, 2002).

Minerals, Policy and Planning Division

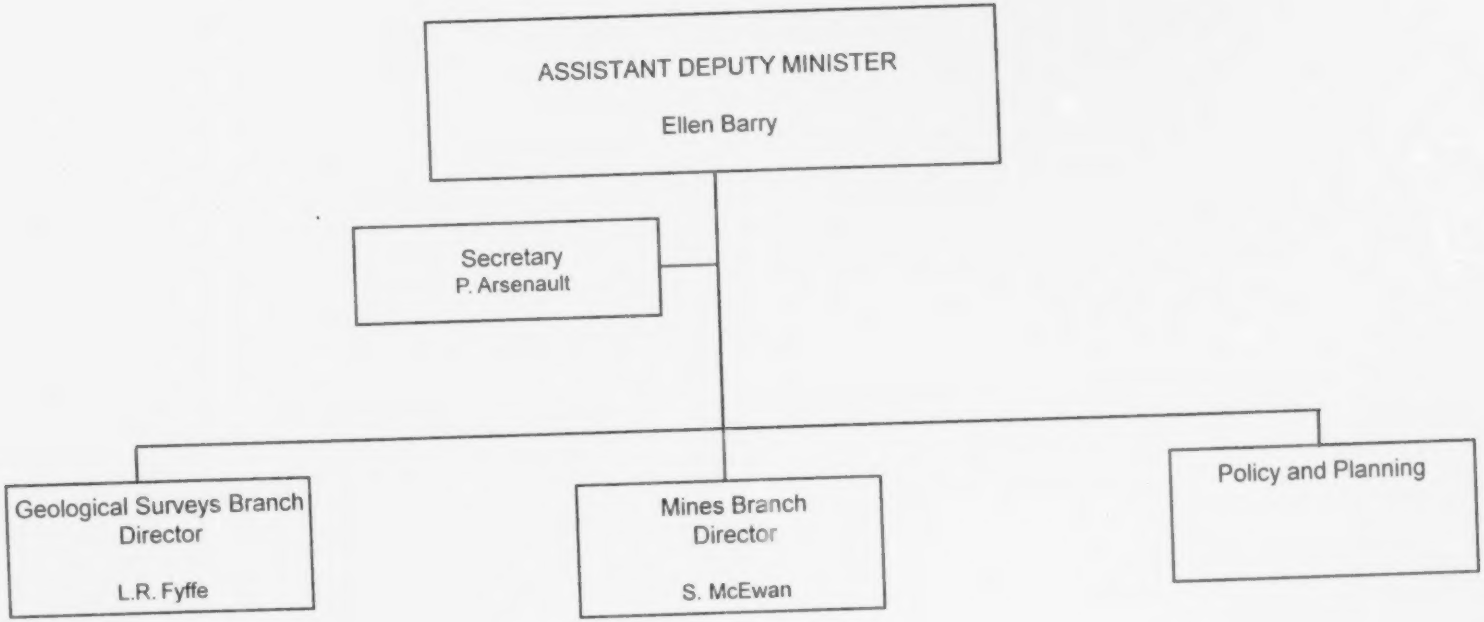
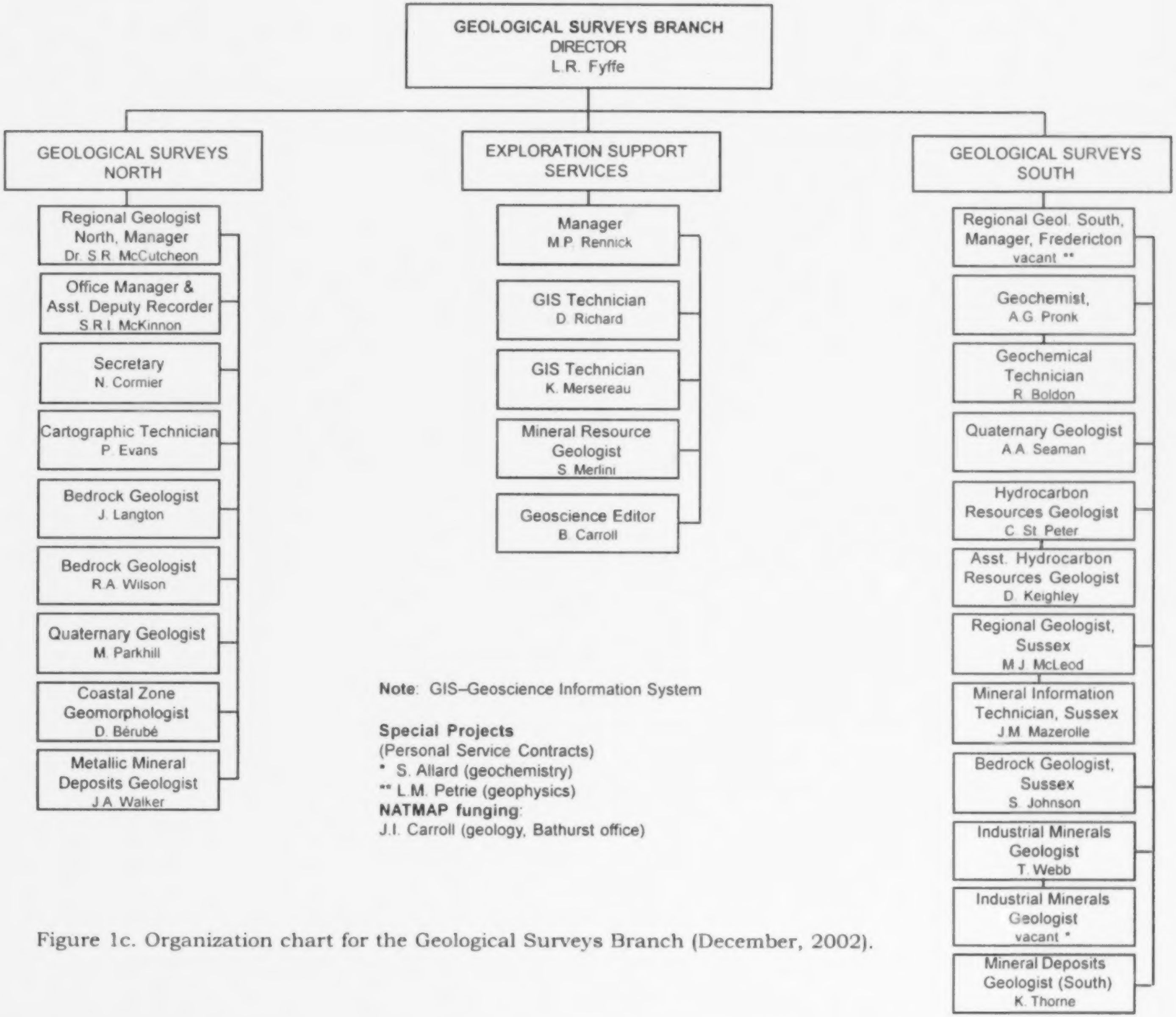

ASSISTANT DEPUTY MINISTER
Ellen Barry
Secretary
P. Arsenault
Geological Surveys Branch
Director
L.R. Fyffe
Mines Branch
Director
S. McEwan
Policy and Planning

Figure 1b. Organization chart for the Minerals, Policy and Planning Division (December, 2002).

Geological Surveys Branch


GEOLOGICAL SURVEYS BRANCH
DIRECTOR
L.R. Fyffe
GEOLOGICAL SURVEYS NORTH
Regional Geologist North, Manager
Dr. S.R. McCutcheon
Office Manager & Asst. Deputy Recorder
S.R.I. McKinnon
Secretary
N. Cormier
Cartographic Technician
P. Evans
Bedrock Geologist
J. Langton
Bedrock Geologist
R.A. Wilson
Quaternary Geologist
M. Parkhill
Coastal Zone Geomorphologist
D. Bérubé
Metallic Mineral Deposits Geologist
J.A. Walker
EXPLORATION SUPPORT SERVICES
Manager
M.P. Rennick
GIS Technician
D. Richard
GIS Technician
K. Mersereau
Mineral Resource Geologist
S. Merlini
Geoscience Editor
B. Carroll
GEOLOGICAL SURVEYS SOUTH
Regional Geol. South, Manager, Fredericton
vacant **
Geochemist,
A.G. Pronk
Geochemical Technician
R. Boldon
Quaternary Geologist
A.A. Seaman
Hydrocarbon Resources Geologist
C. St. Peter
Asst. Hydrocarbon Resources Geologist
D. Keighley
Regional Geologist, Sussex
M.J. McLeod
Mineral Information Technician, Sussex
J.M. Mazerolle
Bedrock Geologist, Sussex
S. Johnson
Industrial Minerals Geologist
T. Webb
Industrial Minerals Geologist
vacant *
Mineral Deposits Geologist (South)
K. Thorne

Note: GIS–Geoscience Information System

Special Projects
(Personal Service Contracts)
* S. Allard (geochemistry)
** L.M. Petrie (geophysics)
NATMAP funging:
J.I. Carroll (geology, Bathurst office)

Figure 1c. Organization chart for the Geological Surveys Branch (December, 2002).

Mines Branch

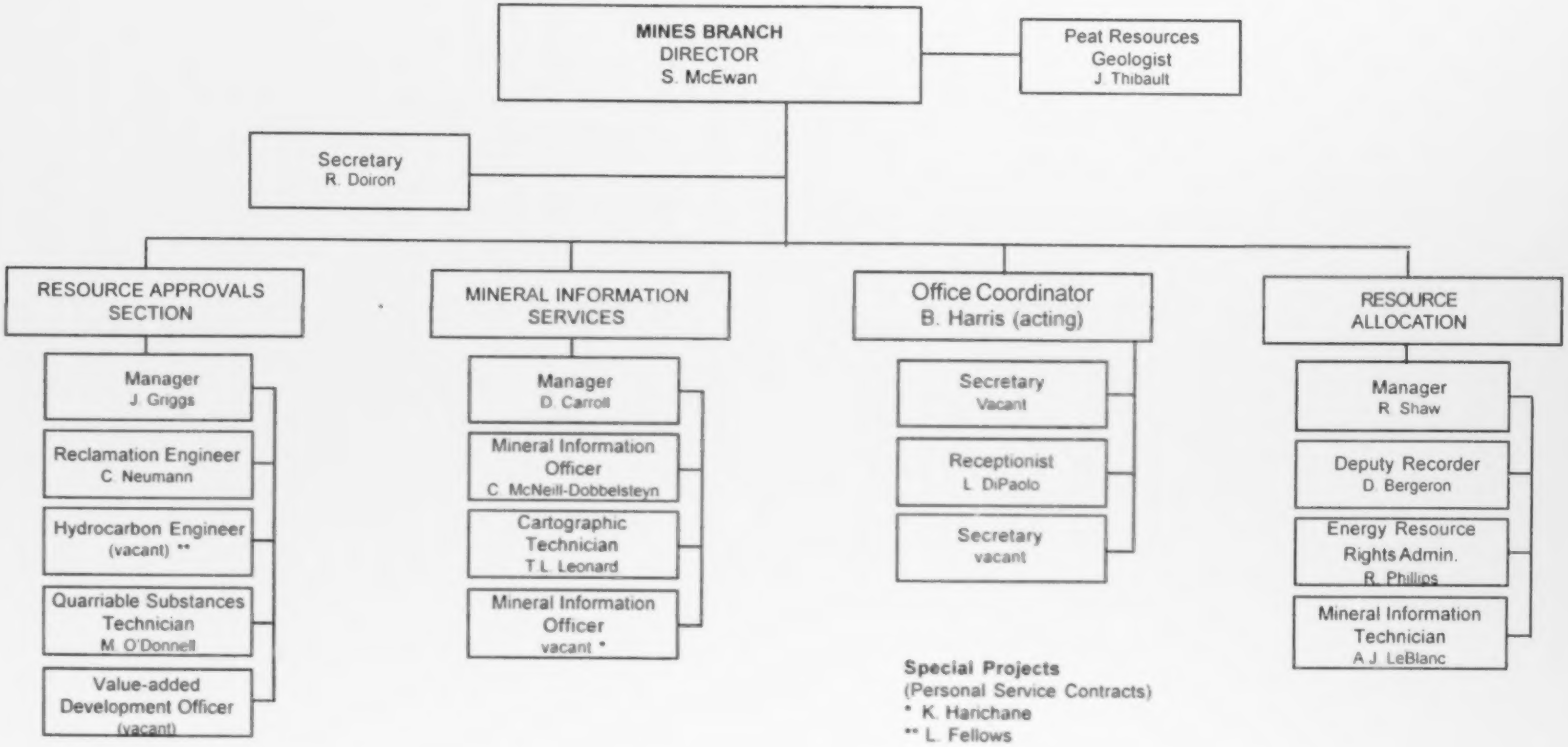

MINES BRANCH
DIRECTOR
S. McEwan
Peat Resources
Geologist
J. Thibault
Secretary
R. Doiron
RESOURCE APPROVALS SECTION
Manager
J. Griggs
Reclamation Engineer
C. Neumann
Hydrocarbon Engineer
(vacant) **
Quarriable Substances Technician
M. O'Donnell
Value-added Development Officer
(vacant)
MINERAL INFORMATION SERVICES
Manager
D. Carroll
Mineral Information Officer
C. McNeill-Dobbelsteyn
Cartographic Technician
T.L. Leonard
Mineral Information Officer
vacant *
Office Coordinator
B. Harris (acting)
Secretary
Vacant
Receptionist
L. DiPaolo
Secretary
vacant
RESOURCE ALLOCATION
Manager
R. Shaw
Deputy Recorder
D. Bergeron
Energy Resource Rights Admin.
R. Phillips
Mineral Information Technician
A.J. LeBlanc
Special Projects
(Personal Service Contracts)
* K. Harichane
** L. Fellows

Figure 1d. Organization chart for the Mines Branch (December, 2002).

Table 1. Geological Surveys Branch and Mines Branch Expenditures, 2002–2003

Province of New Brunswick	
Mines Branch	$1 380 032.60
Geological Surveys Branch	2 221 773.51
Total	**$3 601 806.11**
Province of New Brunswick / Natural Resources Canada Projects	
Appalachian Foreland & Platform Architecture (NATMAP)	78 750.00
Geochemical Survey, Northern New Brunswick	26 775.00
Province of New Brunswick (Dept. of Training & Employment Development, SEED Program)	
Drill core Program	$9 201.16
Province of New Brunswick (Regional Development Corporation)	
Exploration Assistance Program (Junior Mining Assistance; Prospector Development)	$559 056.23
Total, all sources	**$4 275 588.50**

1. The conversion of the bulk of the Division's geological data into electronic format for access online.
2. In conjunction with (1), the development of a Division website, ideally suited to accommodate and interest current and potential clients in New Brunswick's significant mineral and petroleum development potential.
3. Escalation of the Division's promotion of New Brunswick's mineral and petroleum resource development potential.
4. Review and renewal of key mineral, petroleum, peat, and aggregate legislation, making it more comprehensive for the present environmental, social, and economic situation.

In addition to these initiatives, the five-year federal–provincial NATMAP Program continued in 2002 as did both the New Brunswick Junior Mining Assistance Program (NBJMAP), and Prospector Assistance Program (NBPAP) with a budget of $630 000 ($380 000 for NBJMAP and $250 000 for NBPAP).

Geological Surveys Branch

L.R. Fyffe, Director

The Geological Surveys Branch promotes mineral exploration, and advises government and the public regarding land use in New Brunswick through the comprehensive geoscience knowledge base that it has built and maintains. The Geological Surveys Branch has a staff of 25 with a main office in Fredericton and regional offices in Bathurst and Sussex. The branch has three sections, namely Geological Surveys North, Geological Surveys South and Exploration Support Services (Figure 1c).

Extractable resources identified in New Brunswick include metallic minerals such as lead, zinc, copper, gold, tin and nickel; industrial minerals such as potash, gypsum, limestone and peat; and hydrocarbon fuels such as oil, natural gas, bituminous shale and coal. These resources have provided and continue to provide a significant economic benefit to the province.

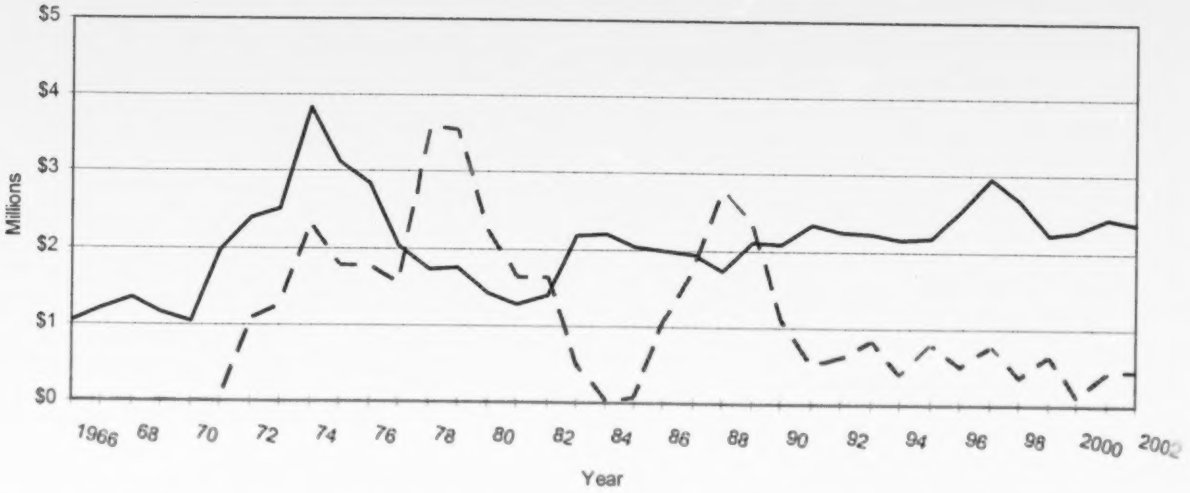


Figure 2. Geological Surveys Branch and Mines Branch expenditures, 1965–2002. Legend: ——— Department A-base; – – – – – Federal/Provincial/other funding ($ 1986 = 100)

Activities within the Geological Surveys Branch include: (a) mapping the bedrock and surficial geology of New Brunswick; (b) maintaining an up-to-date digital inventory of mineral and hydrocarbon resources; (c) developing exploration models to identify favourable areas for exploration; (d) storing and management of drill core inventory; (e) management of exploration stimulation programs; (f) geomorphological mapping and investigation of environmental sensitivities of the coastline; (g) providing expert consultation on exploration, landuse planning and environmental issues.

The 2002–2003 ordinary budget for the Geological Surveys Branch was $2 005 900. Actual expenditures are shown in Table 1.

COMMITTEES Rao Irrinki (retired Director) attended the Committee of Provincial Geologists and National Geological Surveys Committee meetings held in conjunction with the Prospectors and Developers Association of Canada Convention in Toronto in March of 2002.

CONFERENCES Rao Irrinki (retired Director) attended the Annual International Convention and Trade Show of the Prospectors and Developers Association of Canada in Toronto in March 2002.

Geological Surveys North

The main purpose of the Bathurst Regional Office is to provide basic scientific data that will help the mineral industry find and/or develop new mineable resources (both metallic and industrial mineral, including peat) in the northern halfof the Province. This is accomplished by:

- maintaining a geoscience database of northern New Brunswick that is complete and readily accessible;

Editor's Note: Projects commonly consist of a number of phases that are carried out by staff from different sections and branches of the Division. In order to find all the information on particular projects mentioned in this chapter, please refer to the index; the list of references for publications completed in 2002 is at the end of Chapter 1.

- gathering new geoscience data, integrating them with existing data and producing new geological maps and mineral potential models;
- providing map and report reproduction services as well as exploration work histories on mineral properties;
- providing claim and lease information as well as claim recording services;
- providing geological consultation services/advice to mineral industry clients;
- encouraging investment by promoting the mineral potential through talks, poster displays and geoscientific publications on selected areas and/or topics;
- helping to maintain the diamond-drill-core library for northern New Brunswick at Madran.

The staff at the office includes Sharon McKinnon (Administrative Services Officer), Nicole Cormier (Secretary), André LeBlanc (Mineral Information Technician), Phillip Evans (Cartographic Technician), Dr. Steven McCutcheon (Manager/Regional Geologist), James Walker (Metallic Mineral Deposits Geologist), John Langton (Bedrock Geologist), Reginald Wilson (Bedrock Geologist), Michael Parkhill (Quaternary Geologist), Jacques Thibault (Peat Resources Geologist), Dominique Bérubé (Coastal Zone Geomorphologist), Jeffrey Carroll (NATMAP Project Geologist) and Larry Petrie (contract geophysicist). Matthew Adams, Melanié Arseneau, Phillippe Arseneau, Jennifer German, Art Hamilton, Julie LeBlanc and Kathryn MacCarthy were hired as summer personnel in 2002. In addition, Daniel Lagacé (supervisor), Fernand Guitard, Bernard Lagacé, Sylvain Lagacé, Stèphane Hache and Claude Roy were hired as summer personnel at the drill-core facility in Madran.

EXTECH-II PROJECT The Economic Geology Monograph summarizing the results of this project did not get published in 2002 but is expected in 2003.

NATMAP PROJECT This five-year project involves three provinces and is being carried out through the Geological Survey of Canada–Québec Division, under the direction of Denis Lavoie and Daniel Lebel (GSC–Québec), Steven McCutcheon (New Brunswick Geological Surveys Branch) and Stephen Colemann-Sadd (Geological Survey of Newfoundland). It comprises five transects across the Laurentian continental margin, two of which extend across the Gaspé Belt into northwestern New Brunswick. Transect 3 trends south along the Matapédia River to the vicinity of Saint-Quentin. Transect 4 trends northeasterly from the end of Transect 3 toward Dalhousie, across the end of Gaspé to Anticosti Island and beyond (Figure 3: 1).

Bedrock mapping was undertaken in transects 3 and 4 as part of the NATMAP Program. Jeffrey Carroll, assisted by Matthew Adams, carried out 1:50 000 scale mapping under a NATMAP contract in the Gounamitz River (NTS 21 O/12) map area (Figure 3: 2). Reginald Wilson carried out bedrock mapping at 1:20 000 scale in the Atholville (NTS 21 O/15g, h), Campbellton (22 B/2) and Dalhousie (22 B/1) map areas (Figure 3: 3) under A-base funding. John Langton also conducted 1:20 000 scale mapping in Transect 4 but did not finish the map area (21 O/16c; Figure 3:4) because of other commitments.

Regolith mapping (at 1:50 000 scale) was undertaken under A-base funding in Transect 3, as part of NATMAP as well. Michael Parkhill, assisted by Phillipe Arseneau, completed his sampling (235 sites) in the Gounamitz River (NTS 21 O/12) map area, and conducted reconnaissance work to the west (NTS 21 N) to obtain information on ice-flow history (Figure 3: 5).

MINERAL DEPOSIT STUDIES James Walker continued to field check occurrences and enter data into the Mineral Occurrence Database. Assisted by Jenifer German and Art Hamilton, he logged and sampled cores from the Gilmour, Key Anacon, Maliseet and McDonough deposits (Figure 3: 6a–d). In addition, he continued to work part time on deposits in the Shingle Gulch–Mount Costigan area of the Tobique–Chaleur Zone (Figure 3: 6e) for his M.Sc. thesis at the University of New Brunswick.

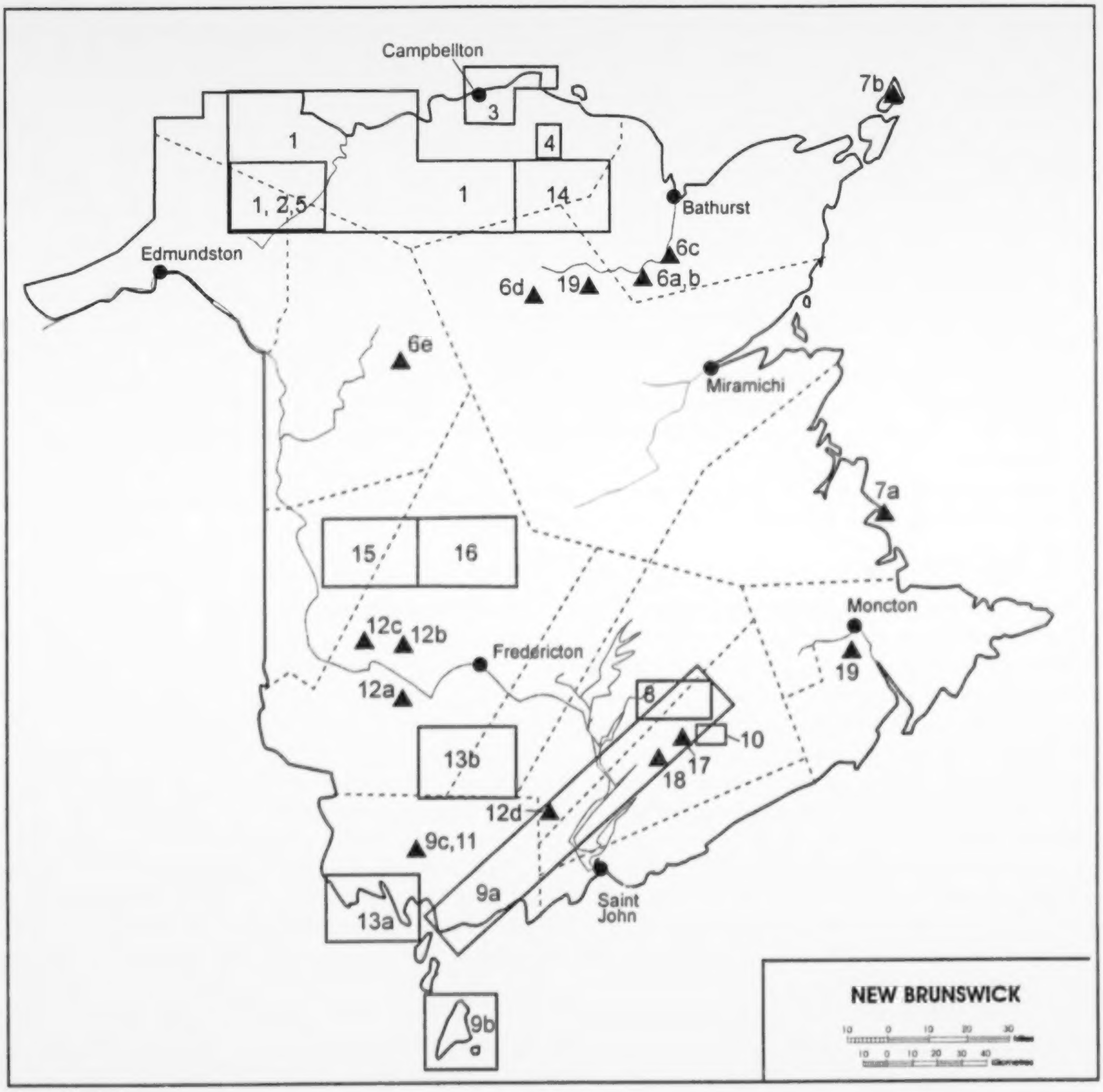

Campbellton
3
4
1
1, 2, 5
1
14
7b
Bathurst
Edmundston
6c
6d
19
6a, b
6e
Miramichi
7a
15
16
Moncton
12c
12b
Fredericton
19
12a
8
10
13b
18
17
12d
9c, 11
9a
Saint John
13a
9b
NEW BRUNSWICK

Figure 3. Areas in which Geological Surveys Branch projects were conducted in 2002: (1) Geological Bridges project, Transects 3 and 4; **Bedrock mapping**: (2) Gounamitz River, (3) Atholville–Dalhousie area, (4) part of Charlo area; **Regolith mapping and till sampling**: (5) Gounamitz River; **Mineral deposit studies**: (6a) Gilmour, (6b) McDonough, (6c) Key Anacon, (6d) Maliseet; (6e) Shingle Gulch–Mount Costigan area; **Coastal zone studies**: (7a) Bouctouche Dune, (7b) Miscou Island; **Bedrock mapping**: (8) Marrtown area; **Radiometric and geophysical studies**: (9a) Brookville and New River terranes, (9b) Grand Manan Island, and (9c) Clarence Stream area; **Bedrock mapping**: (10) western Moncton Subbasin; **Mineral deposits**: (11) Clarence Stream; **Bedrock mapping**: (12a) Lake George, (12b) Springfield, (12c) Connell Mountain, (12d) McKeel Lake; **Surficial mapping and till sampling**: (13a) St. Stephen and (13b) Fredericton Junction; **Stream-sediment and water sampling**: (14) Tetagouche Lakes; **Till geochemistry**, (15) Coldstream; (16) Napadogan; **Potassium/magnesium study**, (17) Lower Millstream; **Magnetite–ilmenite–apatite studies**, (18) Stewarton area, (19) Lower Coverdale.

COASTAL ZONE Dominique Bérubé, assisted by Julie LeBlanc and Melanié Arseneau, carried out coastal erosion studies and maintained a database of coastal change in support of the Coastal Land Use Policy. He also continued to monitor erosional/depositional changes (beach profiles) at Bouctouche Dune and Miscou Island (Figure 3: 7a, b).

PUBLICATIONS Both internal and external publications were prepared by the Bathurst staff. Of the eight papers in "Current Research 2001" (Mineral Resource Report 2002-4), two were contributed by geologists from the Bathurst office. In addition, Jeff Carroll published a paper in Geological Survey of Canada's Current Research 2002-D5.

COMMITTEES In 2002, Steve McCutcheon sat on both the New Brunswick Junior Mining Assistance Program (NBJMAP) and the New Brunswick Prospector Assistance Program (NBPAP) committees. He was a member of the Continued Competency Assurance Committee of the Association of Professional Engineers and Geoscientists of New Brunswick (APEGNB), an Associate Editor of Exploration and Mining Geology, and Finance Chair of the Geological Association of Canada. Michael Parkhill finished his term as Past-President of the Atlantic Geoscience Society (AGS). Reg Wilson became the Vice-President of AGS and was a member of the Legislation Committee of the APEGNB. Dominique Bérubé was a member of the New Brunswick Coastal Standards Development Committee and the Bouctouche Dune Scientific Advisory Committee.

CONFERENCES / FIELD WORKSHOPS / COURSES The Bathurst staff promoted the geology and mineral potential of northern New Brunswick by displaying posters and giving oral presentations at a number of conferences. In January, Jeff Carroll participated in a NATMAP workshop in Québec City. In February, John Langton, Mike Parkhill and Reg Wilson attended and gave talks at the Atlantic Geoscience Society Colloquium in Antigonish. In March, Jim Walker attended and assisted with the New Brunswick booth at the Annual Convention and Trade Exhibition of the Prospectors and Developers Association of Canada in Toronto. In April, Dominique Bérubé attended and presented a poster at the annual meeting of the Southern Gulf of St. Lawrence Coalition on Sustainability in Miramichi. In September, he gave a field workshop on Miscou Island for the Atlantic Division of the Canadian Association of Geographers. In October, he attended and presented a poster at the annual meeting of the Northeast Shore and Beach Preservation Association in Woods Hole. In early November, several staff members of the Bathurst office presented talks and/or posters at the New Brunswick Minerals, Policy and Planning Division's Annual Review of Activities. Abstracts for oral presentations and posters at these conferences are listed at the end of this chapter.

OTHER ACTIVITIES During the year, the staff provided geological consulting and/or exploration support services to geologists and prospectors, both in the office and the field. Visits were made to mineral properties held by the following companies: Aurogin Resources Ltd., Heron Mines Ltd., Montoro Resources Inc., Log House Construction Ltd., and Noranda Inc.

Before closing its Bathurst exploration office in September, Noranda turned over all of its hardcopy and digital files pertaining to New Brunswick to the Geological Surveys Branch under a two year confidentiality agreement. This data set will become public information in September, 2004.

Geological Surveys South

Geological Surveys South staff, located at the Hugh John Flemming Centre in Fredericton, consists of Clinton St. Peter (Hydrocarbon Resources Geologist), Allen Seaman (Quaternary Geologist), Toon Pronk (Geochemist), Rex Boldon (Geochemical Technician), Tim Webb (Industrial Minerals Geologist) and Kay Thorne (Metallics Minerals Geologist). Staff at the Picadilly Road office in Sussex consists of Malcolm McLeod (Manager), Susan Johnson (Bedrock Geologist) and Maurice Mazerolle (Engineering Technician).

TARGETED GEOSCIENCE INITIATIVE Malcolm McLeod and Les Fyffe were active in the cooperative Targeted Geoscience Initiative Project on intrusion-related gold systems in southern New Brunswick spearheaded by the Québec office of the Geological Survey of Canada. Contributions included joint publications, editorial services and several field trips that were provided for participants in the project.

BEDROCK MAPPING Susan Johnson, with field assistance from Keith Seidler, completed a 1:20 000 bedrock geology map for the Marrtown area (parts of 21 H/13a, b and c) during the summer (Figure 3: 8). This area encompasses significant new gold discoveries in the region.

Sandra Barr of Acadia University, with funding from the Geological Surveys Branch, continued her geological research in southwestern New Brunswick. This work includes the radiometric dating of samples from the Brookville and New River terranes and from Grand Manan (Figure 3: 9a,b) by Brent Miller at the University of North Carolina. Steve King and Sandra Barr are also preparing reports on geophysical modelling of terrane boundaries in coastal New Brunswick and granite geometry in the Clarence Stream area (Figure 3: 9c).

CARBONIFEROUS GEOLOGICAL SURVEYS (Clinton St. Peter) Geological bedrock mapping was undertaken on Lower Carboniferous rocks south of Sussex in the western part of the Moncton Subbasin (Figure 3: 10). The objective of this work was to re-examine the pre-Windsor Group stratigraphy in the context of recent findings from the McCully gas field exploration to the north of the study area. For example, recently acquired seismic profiles and well records from the gas field indicate the presence of a significant unconformity in what was considered a depositionally continuous Horton Group. As a result of the bedrock mapping, the unconformity has been demonstrated to be present between the Horton Group and an overlying newly defined sequence of rocks assigned the name 'Sussex Group'. The most significant findings from the mapping were: (1) documentation of an unconformity between the Horton and Sussex groups, (2) subdivision of the Albert Formation into the Dawson Settlement, Frederick Brook and Hiram Brook members, and (3) a recognition that the Sussex Group comprises three formations in the axial part of the Moncton Subbasin. Sandstones in the Hiram Brook Member are the reservoir beds in the McCully gas field, while mudstones of the Sussex Group are the primary reservoir seal.

MINERAL DEPOSIT STUDIES Kay Thorne began employment as a Metallic Minerals Geologist with the department in July, 2002. Her main focus was continued work on determining the controlling features of gold mineralization at the Main Zone of the Clarence Stream gold deposit in southwestern New Brunswick (Figure 3:11).

Dave Lentz of the University of New Brunswick supervised students carrying out mineral deposit investigations at Lake George (Au–W–Sb–Mo), Sringfield (Au), Connell Mountain (Cu–Mo), and McKeel Lake (Ta–Nb–rare earth elements) (Figure 3: 12a–d). Analytical work related to these projects was funded by the Geological Surveys Branch.

GEOCHEMISTRY LABORATORY (Toon Pronk, Rex Boldon, Serge Allard) During the summer of 2002, surficial mapping and till sampling were carried out in the St.Stephen and Fredericton Junction (NTS 21G/03 and 10) areas (Figure 3: 13a–b). This project completes surficial mapping and sampling in the area covered by the recent airborne survey. Toon Pronk (as the scientific authority and intermediary between the Geological Survey of Canada and Federal Department of Supply and Services, and the local contractor) directed a National Geochemical Reconnaissance stream-sediment and water geochemistry survey in the Tetagouche Lakes area of northern New Brunswick (NTS 21 O/09; Figure 3: 14). Toon Pronk and Rex Boldon directed and did quality control for the survey. Publication is expected in 2002. Toon Pronk has prepared the New Brunswick Landscape Map, which is due to be published in 2003.

Rex Boldon provided field and laboratory assistance for several surficial mapping projects. He prepared all collected till samples for analysis and carried out grain-size analyses on till samples from surficial mapping in northwestern New Brunswick (NATMAP; Figure 3: 5), and the Coldstream map area (Figure 3: 15).

QUATERNARY GEOLOGY (Allen Seaman) Till geochemistry investigations in the Coldstream (NTS 21 J/06) map area were begun in 1998 and continued in 2000 and 2001. Till sampling was completed in the Coldstream map area (Figure 3: 15) during 2002, and was begun in the adjacent Napadogan (NTS 21 J/07) map area (Figure 3: 16). There were four components to the 2002 sampling program: (1) the completion of grid point sampling in the west half of the Coldstream map area (14 sites); (2) sampling around the Deersdale (URN 1419) mineral occurrence identified in 2001 (4 sites); (3) follow-up sampling around previously identified anomalies (27 sites); and (4) the beginning of grid point sampling in the Napadogan map area (38 sites). The preponderance of the follow-up sampling (17 sites) was in the area around the Sisson Brook (URN 0207, 0208), Nashwaak (URN 0209) and Manzer Brook (URN 1281) mineral occurrences. The sampling in the Napadogan map area encompassed the expected glacial dispersal area from these known occurrences.

INDUSTRIAL MINERALS (Tim C. Webb and D.V. Venugopal) In 2002, the industrial minerals section of the Geological Surveys Branch continued with geotechnical activities related to gypsum and anhydrite, titanium, silica, feldspar, magnesium and natural stone resources. In addition, the section dealt with an assortment of issues pertaining to the development of New Brunswick's nonmetallic mineral resources.

The re-assessment of New Brunswick's gypsum and anhydrite resources was completed resulting in the publishication of several detailed reports and accompanying maps. Two new occurrences of arenaceous sandstone from southeastern New Brunswick were resampled, analysed and submitted for beneficiation testing to determine their potential for glass-quality material. Several weatherered granite deposits from the north-central and southwestern parts of the province were sampled and analysed with respect to their total alkali and alumina contents and their potential as key raw materials supporting the glass, ceramic and filler industries. Three samples were selected for preliminary upgrading tests, which were reasonably successful in producing feldspar and high-grade silica concentrates. Another project was initiated to consider, in a preliminary manner, various extraction and processing alternatives for the potassium and related magnesium resources at Lower Millstream near Sussex (Figure 3: 17) in an attempt to regenerate exploration and development interests in the deposit.

An increase in requests for technical information on New Brunswick's industrial rock and mineral resources indicate a need to organize material to better facilitate the needs of various clients. The retirement of key industrial minerals staff has had an impact on the ability of remaining staff to respond to inquiries in a timely and efficient manner, while effectively managing other related activities. A series of databases specific to the province's industrial rock and mineral resources are being developed. Specific deposit information, general industrial mineral commodity information, and a listing of publicly available industrial mineral reports and maps are being prepared and should assist in achieving our information management goals.

Natural stone resources are frequently overlooked from an exploration and development prospective and yet appear capable of providing a host of high-value products to the landscaping, horticultural and related construction markets. The market potential throughout North America (the northeast U.S. in particular) for these types of materials are undeniable. Given New Brunswick's diverse geology and favorable geographic location to a large U.S. market, there are reasonable expectations that such a resource could support one or several small- to medium-sized businesses. These resources generally require minimal capital investment in expensive processing and related equipment, and thus present themselves as a realistic opportunity for expanding and diversifying the Province's mineral resource sector.

A project is underway to identify potential sources of "natural" flagstone and fieldstone on selected Crown lands in New Brunswick. This is part of a multi-phase project to determine the development potential on Crown land of cobbles, boulders, and decorative (granite) aggregate materials. So far, results are very encouraging with over 150 sites identified and sampled.

A comprehensive study related to the potential for titanium deposits in New Brunswick was finalized and completed in 2002. Most of this work was focused on what appears to be a favorable gabbro-anorthosite sequence of rocks, host to significant magnetite–ilmenite–apatite mineralization in the Stewarton area (Figure 3: 18), 25 km west of Sussex in south-central New Brunswick, and the Lower Coverdale area (Figure 3: 19), several kilometres south of Riverview in southeastern New Brunswick. A detailed report and geological map of the area includes petrography, geophysical modeling, rock geochemistry for more than 30 samples, microprobe work on selected samples and a literature search into the nature of titanium deposits in general.

OTHER ACTIVITIES Maurice Mazerolle and Rex Bolden continued overseeing the core storage facilities in Sussex and Fredericton, respectively. A student (Brandon DeBow) was hired in Sussex to help organize and catalogue core. Maurice Mazerolle, also expended considerable effort in a project designed to produce a series of 1:20 000-scale bedrock geological maps from pre-existing information for the Caledonia area.

Throughout the year, Toon Pronk visited classrooms when teachers made requests through the Geological Surveys Branch. A total of 10 classes, from grades K to 6, mostly one but sometimes two classes at a time, in seven different schools (approximately 300 students) were visited. Mostly grade 5 and 6 students learned about rocks and minerals, volcanoes, earthquakes, ice ages, soils, erosion, mining, and earth science in general. The presentation is adapted to fit the "Changes in the Land" earth science module in the science curriculum. It is increasingly difficult to fit these visits into our section's activities.

PUBLICATIONS In 2002, Allen Seaman published the results of till geochemistry investigations in the eastern part of the Coldstream (NTS 21 J/06) map area. Site characteristics and geochemical data were released as Open File 2002-5. A paper on the "Surficial geology and till geochemistry of the eastern two-thirds of the Coldstream (NTS 21 J/06) map area, York and Carleton counties, New Brunswick" was published in the Division's "Current Research 2001" volume (Mineral Resource Report 2002-4).

A field trip guide (Open File 2002-7) was prepared by Kay Thorne, Malcolm McLeod, Les Fyffe, Jean-François Ravenelle, Glenn Lutes, Don Hoy, Sebastien Castonguay and Sheila Watters on the gold mineralization in the Ordovician Rocks in the Rollingdam area of southwestern New Brunswick. This guide was to accompany the field trip offered as a part of the Department's 27th Annual Review of Activities. A paper on the geochronology of the Waweig Formation of the Mascarene Group in southwestern New Brunswick, co-authored by Brent Miller and Les Fyffe, has been submitted to *Atlantic Geology*. In addition, the southern New Brunswick group contributed to several oral and poster presentations presented at New Brunswick's Annual Review of Activities in November.

Several reports and maps featuring gypsum, anhydrite and titanium resources were published in 2002.

COMMITTEES Toon Pronk is the New Brunswick representative on the Canadian Geoscience Education Network.

Susan Johnson was a representative on the Earth Sciences Committee of the Atlantic Provinces Council on the Sciences, the goal of which is to promote earth science in the Atlantic Canada. Malcolm McLeod was a member of the of the committee overseeing activities for the Geological Survey of Canada's Targeted Geoscience Initiative in southern New Brunswick. He sat on the review committees for the province's Junior Mining and Prospector assistance programs.

CONFERENCES/WORKSHOPS/FIELDWORKSHOPS Toon Pronk unveiled the draft copy of the New Brunswick Landscapes Map and Serge Allard presented a poster on the till geochemistry survey in the Saint Stephen and Fredericton Junction areas (Figure 3: 3: 13a,b) at the annual Review of Activities.

In February, Clint St. Peter attended the Atlantic Geoscience Society Colloquium and Annual General Meeting in Antigonish, Nova Scotia where he presented a paper on "The Harvey–Hopewell Fault, New Brunswick." In April, Clint St. Peter, Ron Phillips and John Griggs attended the Canadian Association of Petroleum Landmen's prospect exchange in Calgary where they offered a booth displaying current oil and natural gas activities and the opportunities for oil and gas rights acquisition and exploration in New Brunswick. In June, Clint St. Peter attended the Canadian Society of Petroleum Geologist annual conference in Calgary where he was invited to present a paper on "Architecture of the Late Paleozoic Maritimes Basin in New Brunswick, Canada" in a special session called "The Paleozoic Basins of Eastern Canada: a Fresh Look on Hydrocarbon Potential and Plays." In August, a field workshop was offered in the Sussex area to geologists from Corridor Resources Inc., Potash Corporation of Saskatchewan, Inc. and EOG Resources Canada Inc. The purpose was to familarize industry geologists with relevant features of the petroleum system in the Albert Formation and thereby assist them in their exploration for gas in the adjacent McCully gas field.

Early in July, Kay Thorne attended the Eighth Biennial Pan-American Conference on Research on Fluid Inclusions held in Halifax, Nova Scotia. In October, she helped Prof. David Lentz to organize an Atlantic Universities Geological Conference field trip to the former Mount Pleasant mine and the Clarence Stream gold deposit. Approximately 25 students were in attendance. Early in December, Kay Thorne visited several intrusion-related gold deposits at various stages of development and an operating open pit mine in northern Spain. Malcolm McLeod participated in the Annual Cordilleran Exploration Roundup, Vancouver, British Columbia in January, and the Annual International Convention and Trade Exhibition of the Prospectors and Developers Association of Canada in Toronto, Ontario in March. Susan Johnson and Malcolm McLeod attended the Atlantic Geoscience Society Colloquium and Annual General Meeting, 2002 in Antignoish, Nova Scotia. Susan presented a paper at that meeting.

Tim Webb presented a paper at the Division's Review of Activities in November. Tim's paper, "Industrial Rock and Mineral Resources...Some Projects We're Workin On," was a review of the Branch's industrial mineral activities during 2002. Tim also provided technical support for the 2002 annual meeting and field trip sponsored by the New Brunswick Prospectors and Developers Association. The event, which featured industrial minerals in southeastern New Brunswick, was attended by 45–50 experienced and novice prospectors. A talk entitled "A Facelift for Industrial Mineral Potential in New Brunswick" was followed the next day by a field trip to several geological and other points of interest related to the exploration and development of Lower Carboniferous gypsum, anhydrite and limestone deposits in the Hillsborough–Albert Mines areas of Albert County.

Exploration Support Services

The Exploration Support Services Section consists of the Manager Paul Rennick, Diane Richard (GIS Technician), Ken Mersereau (GIS Technician), Shasta Merlini (Exploration Support Programs), and Barbara Carroll (Geoscience Editor). This Section is responsible for the New Brunswick Mineral Occurrence Database; Drill Core Management and Exploration Support Programs; Computerization of Geoscience Data and GIS-related Projects; and Geoscientific Editorial Services.

NEW BRUNSWICK MINERAL OCCURRENCE DATABASE (Shasta Merlini) The New Brunswick Mineral Occurrence Database includes descriptions of metallic mineral occurrences in New Brunswick that range in size from small showings to operating mines. The data recorded include descriptions of the geological setting, geographic location, prospecting history, geochemical and geophysical surveys, trenches and drill holes, assays, and published reserves. Sources of information are listed and include the Division's published geological reports, maps, and unpublished file material, industry assessment reports, Geological Survey of Canada publications, scientific journal articles, and university theses. All coordinates are in the New Brunswick Stereographic Projection, based on the North American Datum 1983. The New Brunswick Mineral Occurrence Database is updated on an ongoing basis for the entire province.

The database no longer uses dBASE file format. It is now available in Microsoft Access. There are currently 1420 mineral occurrences, with text files available for the majority. A selected portion of the data is now available on the Department's website (http://www1.gnb.ca/0078/GeoscienceDatabase/index.htm).

DRILL-CORE MANAGEMENT AND EXPLORATION SUPPORT SERVICES (Shasta Merlini) The Geological Surveys Branch maintains drill-core storage facilities in Fredericton, Bathurst, and Sussex. The Bathurst facility, located approximately 30 km north of Bathurst at Madran, was built in the mid-1970s with funding from the Canada–New Brunswick General Development Agreement. The Sussex facility, located behind the Regional Office at Picadilly, was built in the 1980s from funding under the Canada–New Brunswick Mineral Development Agreement. The Fredericton core-storage facility was built as part of the Hugh John Flemming Forestry Centre in the late 1980s. All facilities are equipped with well-lit viewing rooms and core saws. The facilities are well used by industry and government geologists.

A selected portion of the drill-core database is now available on the Department's website (http://www1.gnb.ca/0078/GeoscienceDatabase/index.htm).

In 2002, the Geological Surveys Branch received core from NB Dept. of Transportation, Three-D Geoconsultants Ltd., Merton Stewart, Noranda Inc., Geological Survey of Canada, Annapolis Valley Goldfields Inc., Columbia Natural Resources Canada, Ltd., BP Minerals Ltd., Heron Mines Limited, Slam Exploration Ltd., Aurogin Resources Ltd., Omni Mines Ltd., and Nicon Holdings Ltd.

PROVINCIAL EXPLORATION AND DEVELOPMENT INITIATIVES The Department of Natural Resources and Energy continued the New Brunswick Junior Mining Assistance Program and the New Brunswick Comprehensive Prospector Development Program in fiscal year 2002/2003 to stimulate mineral exploration. This was the second of a three-year program with an annual budget of $600 000 ($350 000 for NBJMAP and $250 000 for NBPDP). The funding is provided by the Regional Development Corporation.

The New Brunswick Junior Mining Assistance Program (NBJMAP) The first junior mining assistance program, the New Brunswick Exploration Assistance Program (NBEAP), was introduced in November, 1994 and was funded by the Canada–New Brunswick Cooperation Agreement on Economic Diversification. In 1998, NBEAP received funding from the Provincial government. This program had the same objectives and guidelines as for the previous federal–provincial program. In 2000, NBEAP was funded completely by the New Brunswick Department of Natural Resources and Energy. The New Brunswick Junior Mining Assistance Program (NBJMAP) was initiated in 2001. The main objective of the program is to provide financial assistance to junior mining companies in order to increase the probability of finding economic reserves of mineral resources in New Brunswick. This program will provide up to 50% of the project cost to a maximum of $40 000 per company per year. The minimum amount available per project is $10 000. The remaining costs of the project will be borne by the applicant, either in cash or "in-kind" work. The NBJMAP Review Committee, chaired by Shasta Merlini and comprising Malcolm McLeod, Brian Roulston and Steven McCutcheon, reviewed 13 applications and recommended that 11 applicants receive assistance for a total of $380 000.

Comprehensive Prospector Development Program (NBPDP) This program includes: the New Brunswick Prospector Assistance Program ($200 000), Prospector Training ($25 000), Prospector Rewards (up to $5000), and Prospector Promotion ($20 000).

The earliest prospector assistance program, the Mineral Exploration Stimulation Program, was introduced in 1988 by the Geological Surveys Branch. The New Brunswick Prospector Assistance Program (NBPAP) was initiated in 2001, with the same objectives and guidelines as the previous program. Successful applicants to the program are awarded grants to help defray their prospecting costs. Eligible expenses for the program are analyses, mileage, trenching, geophysics, and geological consulting. Prospectors are not allowed to charge capital expenses or wages to the program. The recipient must provide the Program Coordinator with a sample location map, results of analyses, and receipts documenting expenses in order to receive the final instalment of the grant. In 2002, applications were reviewed by a committee chaired by Shasta Merlini. Members of the NBPAP Review Committee were Malcolm McLeod, Steven McCutcheon, and Gary Woods. They reviewed 52 applications for funding and approved 47. The NBPAP budget was $200 000 in 2002 and the maximum grant was $8000.

Prospector Training funds were provided for an Advanced Prospecting Course in Bathurst in April and three Introductory Prospecting Courses in St. Andrews, Fredericton, and Moncton during September and October, 2002. The instructors were hired under contract. Also in September, a prospector's tent was set up at the Sussex Balloon Festival. The Division display consisted of a number of posters describing prospecting and exploration in the Province, and a collection of New Brunswick rock and mineral hand specimens.

Prospector Rewards funding in the form of a cash reward was provided to Emilio Doiron for generating a claim-staking rush with his Armstrong Brook Property and to Glenda and Clovis Godin for the most spectacular new showing. Glenda Godin was also chosen as the New Brunswick Prospectors and Developers Association's "Prospector of the Year."

Prospector Promotion funding was provided to assist four prospectors in attending the Annual Cordilleran Exploration Roundup in Vancouver and five prospectors in attending the Annual International Convention and Trade Exhibition of the Prospectors and Developers Association of Canada in Toronto so that they could promote their exploration properties to both junior and major mining companies. Some of the funding was used to help with preparation of poster displays. The prospectors receiving assistance were Emilio Doiron, Clovis Godin, Rufus Smith, Dave Stevens, Wayne Carroll, Peter Fenety, Bill Gardiner, Frank Ross, and Ken Whaley.

COMPUTERIZATION OF GEOSCIENCE DATA AND GIS-RELATED PROJECTS (M.P. Rennick, K. Mersereau and D. Richard) Staff continued to update databases using the Geoscience Information System (GSIS). The following 12 GSIS-related projects were conducted during the year.

Base Maps (M.P. Rennick and D. Richard) Customized 1:20 000 and 1:50 000 scale base maps were provided for provincial field geologists working on mapping projects, as well as for federal and industry partnership programs. These maps were produced by combining Service New Brunswick 1:10 000 scale bases and contours from the Digital Elevation Model and, where requested, adding updated road network information obtained from Timber Management Branch. These maps contain selected features of the original Service New Brunswick base.

Geochemical Surveys (M.P. Rennick and K. Mersereau) Provided digital files of hydrographic and topographic base map layers, and digitized sample locations with sample results, as requested, for public distribution. The GIS Section staff have been customizing these files upon request.

Bedrock Geology Maps (K. Mersereau and D. Richard) Maps for the Restigouche and other bedrock-related projects were digitized and hard copies were produced for public distribution. A few bedrock geology maps completed before 1990 were also digitized depending upon the priority and availability of digitization resources. The first priority is to digitize current field projects as requested. Diane Richard continued compiling digitally a Lexicon of Stratigraphy in New Brunswick, that will reflect the bedrock geology of the recently revised NR-1 map. A simplified version of the NR-1 map was created to make a new Metallogenic Map of New Brunswick (NR-7). The metallogenic map used a subset of the mineral occurrences from the Mineral Occurrence Database.

Surficial Geology Maps (K. Mersereau) The surficial geology maps for southern and central New Brunswick projects (Toon Pronk, Al Seaman) were digitized for public distribution. A new digital version of the Surficial Geology Map of New Brunswick was created by Al Seaman and Ken Mersereau.

Industrial Mineral Maps (K. Mersereau) All maps from the Aggregate Resource Atlas, consisting of geology and aggregate resources, have been digitized and are available for public distribution.

Aggregate Inventory Maps (K. Mersereau) Custom 1:12 500 scale maps are being created for the sand and gravel permit sites.

Digital Mineral Claim Management System Andy LeBlanc has continued to update the mineral claim maps using the Digital Claim Management System. Standard 1:50 000 and 1:150 000 scale hard-copy mineral claim maps are produced in Fredericton and Bathurst for public distribution and internal use. Paul Rennick created a 1:500 000 scale Claim Map of New Brunswick for presentation at the Review of Activities and for distribution electronically on the web site.

Assessment Work Location Maps for New Brunswick These 1:50 000 maps continue to be updated by Ken Mersereau.

Geoscience Publication Indexing System (GPIS) During the initial probing study of the Integrated Mineral Resource Management System (IMRMS), the GPIS was identified as the first priority. Developed in 1996, the GPIS is designed to provide users with a means for quickly searching a large database containing publication information. Included is geoscience information on New Brunswick published by the Geological Survey of Canada (maps and reports), by the mineral industry (mineral exploration reports of work), and by scientific journals (papers). Copies of all publications are held by the Mineral, Policy and Planning Division. Queries may include map scales, repository information, authors, subject key words, and prices.

Geoscience Databases The structure of a number of data collections has been modified to better accommodate storage and access. Modification of the Mineral Occurrence Database was completed to aid in the creation of a Metallogenic Map of New Brunswick. This will maximize usability of geochemical data within the Minerals, Policy and Planning Division and improve the mechanism for exporting this data to industry clients.

Similar to the geochemistry database, modifications were made to the Borehole Catalogue (Lori Fellows), the Seismic Database, and the Mineral Occurrence Database. Erinn Arnold customized and reformatted the New Brunswick mineral history database that was compiled by Bill Gardiner.

Mineral Claim Tracking System This system, which had been utilizing dBase III to manage mineral-claims-related information, has been upgraded to a relational INGRES database (RASMIN), by Phil Butland of Information Services and Systems. Based on the scope and objectives of the IMRMS, the Mineral Resource Allocation System will manage all resource rights, including mineral claims, leases and agreements. Mineral claims information is posted on the Province of New Brunswick Internet site, with weekly updates.

Electronic Access (M.P. Rennick) The project entailed the custom programming of an Internet Map Server that will allow access, through the internet, to the Geological Surveys Branch geoscience databases utilizing a map interface. Access to these databases will be created through a customized Spatial Fusion application. When completed, this application will be deployed on a departmental internet server.

GEOSCIENTIFIC EDITORIAL SERVICES The Geoscience Editor for Minerals, Policy and Planning Division publications, Barbara M.W. Carroll, is responsible for editing geoscience maps and editing and formatting geoscience reports submitted by Division staff for publication as Mineral Resource Reports or Information Circulars. The third category, Open File, is published as received. A system of scientific/technical review has been put into place that ensures that peers review manuscripts before they are submitted for publication. Annually prepared publications include : "Preliminary Review of New Brunswick's Mineral Industry," "Rétrospective préliminaire de l'industrie au Nouveau-Brunswick," "New Brunswick's Mineral Industry," "Current Research," and "Abstracts/ Résumés." In 2002, 34 reports and 49 maps were edited and/or prepared for publication.

COMMITTEES Paul Rennick was on the Georeferenced Civic Address Data Base working group, the Information Technology Advisory Committee, the Mineral Information Management Committee and the Canadian Geoscience Knowledge Network Metadata Catalog and Mineral Deposits working groups.

Shasta Merlini was the Review Committee chairman for the New Brunswick Prospector Assistance Program and the New Brunswick Junior Mining Assistance Program.

CONFERENCES / WORKSHOPS / COURSES Paul Rennick attended a three-day Canadian Geoscience Knowledge Network workshop held in Toronto, the Ground Water workshop in Fredericton and the National Mapping workshop in Halifax. Paul Rennick prepared poster displays on Digital Data and Electronic Access at the Review of Activities.

Shasta Merlini and Paul Rennick presented poster displays at the Review of Activities. Shasta Merlini organized several prospecting courses around the province.

MINES BRANCH

Sam McEwan, Director

The Mines Branch is responsible for the allocation of rights and development of New Brunswick's mineral, energy, and Crown peat and aggregate resources. These natural resources are administered under the following legislation and respective regulations: the *Mining Act, Quarriable Substances Act, Oil and Natural Gas Act, Bituminous Shale Act* and the *Ownership of Minerals Act.* The Branch also has responsibility for the *Underground Storage Act* and the *Pipeline Act.* The Branch provides a variety of geoscientific, technical, and support services to the clients and staff of the Minerals, Policy and Planning Division. The Branch is composed of four sectors: Resource Allocation, Resource Approvals, Mineral Information Services, and Peat (Figure 1d).

The Branch is primarily located in Fredericton; however, two staff positions are located in the Bathurst Regional Office. The principal activities of the Branch include: (1) the registration and maintenance of records for mineral claims staked in the Province; (2) the review and approval of applications for mineral, aggregate, hydrocarbon and peat resource developments and pipelines (these include mines, pits and quarries, peat extraction, oil and gas exploration and production facilities, pipelines, underground storage and bituminous shale developments); (3) the monitoring of resource operations to ensure optimal extraction and use of the resource as well as compliance with approved feasibility studies and reclamation plans; and (4) the management of a program intended for the promotion of adding value to the resources under its administration. For the 2002–2003 fiscal year, the Branch had an A-base budget of $1 548 300 and 20.0 full-time equivalent positions. Actual expenditures are given in Table 1.

COMMITTEES Sam McEwan is a member of the Intergovernmental Working Group (IGWG) Directors of Mines Subcommittee. This committee has been created to facilitate the exchange of information between those Federal, Provincial and Territorial representatives directly responsible for legislation as it relates to the extraction of minerals in their respective jurisdictions. Mr. McEwan attended one meeting of this committee, in Winnipeg, Manitoba. Mr. McEwan also chaired another IGWG Subcommittee on Environment Canada's amendments to the Export and Import of Hazardous Waste Regulation. This subcommittee was established to provide a provincial and industry perspective to Environment Canada in their efforts amend the Export and Import of Hazardous Waste Regulation. Several conference calls were held with the member provinces on this issue. He also was a member of the joint government–industry Peat Committee on Site Abandonment and Security to further develop a Provincial policy on peat reclamation. He was also a member of the in-house Service Delivery Advisory Committee to review the Crown Lands Branch's land evaluation process.

CONFERENCES/WORKSHOPS In February 2002, Mr. McEwan attended a Hazardous Waste Workshop in Halifax, Nova Scotia, sponsored by Environment Canada in their efforts to amend the Export and Import of Hazardous Waste Regulation. In September, he also attended the Mines Ministers' Conference in Winnipeg, Manitoba.

Peat

The Peat Resources Geologist, Jacques Thibault, is responsible for managing the peat resources of the Province and for monitoring activities on 37 industrial peat leases. The peat resources geologist coordinates the peat lease application process. He also compiles statistics on the sector and provides expert advice to government, industry and the public in general.

The Province of New Brunswick is the principal peat producing area of Canada with about 32% of the national output. In New Brunswick, peat is defined as a quarriable substance and belongs to the landowner. About 70% of potentially commercial peatlands occur on Crown lands, which explains why the provincial government plays a major role in the administration of that resource. The current focus of the province's peat development strategy is on resource allocation, conservation of representative natural peatlands, and restoration of abandoned commercial peat operations.

COMMITTEES Jacques Thibault is a member of the interdepartmental committee formed to draft procedures for decommissioning and reclaiming peat mine sites. Jacques is also a member of the Geology Working Group of the International Peat Society.

CONFERENCES / WORKSHOPS In March, Jacques Thibault took part in the 9th Annual Workshop on activities of the Peatland Ecology Research Group (PERG) at Laval Université in Québec City. He also presented a paper on the status of peat resources in New Brunswick at a workshop held at Université de Moncton. In May, Jacques accepted an invitation from the Québec Department of the Environment to present New Brunswick's Provincial Policy on Peat Mining at a workshop on wetlands held in Québec City. In June, Jacques went back to Québec City at the invitation of the Canadian Sphagnum Peat Moss Association to explain, during the annual general meeting of the CSPMA, how New Brunswick's Provincial Policy on Peat Mining will be addressing the decommissioning and reclamation of peat operations. In September, Jacques then travelled to Estonia, invited as keynote speaker, to attend the International Peat Symposium on "Peat in Horticulture - Quality and Environmental Challenges." His paper, entitled "New Initiatives in Managing Peatland Resources in New Brunswick, Canada" was later published in the symposium's proceedings. In October, Jacques attended a two-day peatland restoration workshop held in Shippagan. The workshop was organized by Dr. Line Rochefort, Laval University.

Resource Allocation

In 2002, Resource Allocation staff (Figure 1d) consisted of Ron Shaw (Manager, Recorder), Diane Bergeron (Deputy Recorder), and Ron Phillips (Energy Resource Rights Administration–oil, natural gas, bituminous shale and underground storage).

Reports of work, submitted to the Resource Allocation Section in accordance with the *Mining Act, Oil and Natural Gas Act, Bituminous Shale Act,* and *Underground Storage Act,* are checked for compliance with the relevant regulations and work credits are applied to appropriate properties. Upon acceptance, the reports are processed and forwarded to the Mineral Information Services staff for microfilming, and storage. Mineral resource allocation and exploration statistics are presented in Table 2 and Figure 4.

LEGISLATION Work continued with the second phase review of the *Oil and Natural Gas Act* initiated to modernize the outdated legislation. An industry stakeholder meeting in November 2002 introduced the proposed regulatory changes that will result in a new drilling and production regulation, an amended geophysical regulation and a new royalty regulation. The first phase of the program to review legislation was completed the previous year with amendments to the tenure system.

COMMITTEES Ron Shaw attended the annual Provincial/Territorial Mining Rights Committee meeting in Regina in October of 2002. The committee is an informal forum established to share information regarding mining rights administration across Canada. In sharing such information, it is hoped that each jurisdiction would, over time, develop similar methods for dealing with similar mining rights situations.

Ron Phillips attended the Intergovernmental Petroleum Tenure Committee meeting in Ottawa

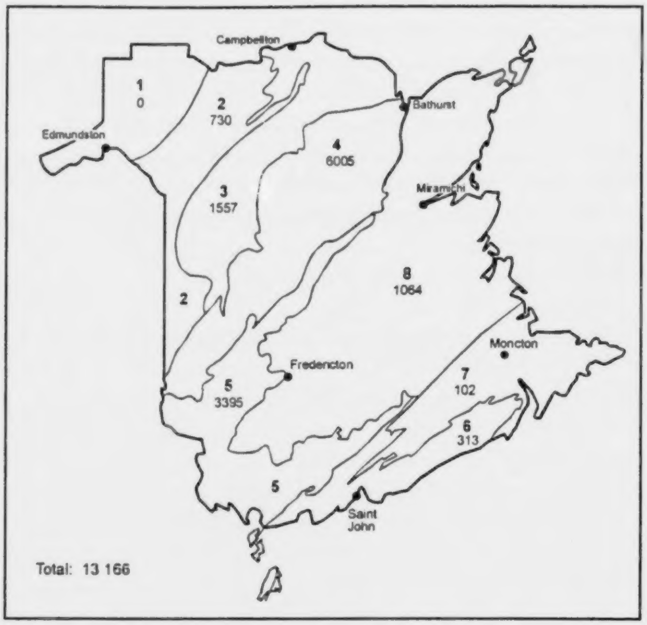
Table 2. New Brunswick Mineral Resource Allocation and Exploration Statistics, 2001 and 2002

Mineral Resource Allocation (total in effect at year's end unless specified for the year)	2001		2002	
	Number	Hectares	Number	Hectares
Mining Act				
Prospecting Licences Issued (year)	61	---	91	---
Claims Recorded (year)	2 232	35 712	2118	33 888
Claims Expired (year)	3 288	52 608	3242	51 872
Claims in Effect	14 251	228 016	13 166	210 656
Coal Agreements	4	58 917.6	1	n/a
Potash Exploration Agreements	0	0	2	20 000
Potash Leases	2	20 024.2	2	20 024.2
Mining Leases	17	12 691	17	12 691
Total Agreements and Leases (above)	---	91 632.8	---	n/a
Total in Effect	---	319 648.8	---	n/a
Oil and Natural Gas Act				
Licences to Search	32	659 051.4	32	659 051.4
Leases	8	51 358.7	7	17 947.2
Bituminous Shale Act				
Licences to Search	1	26 833	0	0
Development Permits	0	0	0	0
Leases	0	0	0	0
Underground Storage Act				
Storage Exploration Licences	7	28 791	8	43 855.3
Storage Licences	0	0	0	0
Construction Permits	0	0	0	0
Quarriable Substances Act				
Quarry Permits	248	---	242	---
Quarry Leases	16	608.155	15	525.55
Peat Exploration Licences	3	1 002	3	1013
Peat Leases	36	14 433	36	15 133.8
Peat Options	11	3 580	8	2658

Exploration Summary	2001		2002	
	Work Reported	Value	Work Reported	Value
Mining Act				
Reports of Work (RW)	96 reports filed	$5 608 576+	99 reports filed	$5 739 360+†
Drilling Reported in RW	247 holes (60 131 m)	$4 333 701.06	211 holes (58 366 m)	$3 367 953
Potash Exploration	---	0	---	0
Oil and Natural Gas Act	8 wells (21 200 m*)	$24 860 808.00	2 wells (7200 m*)	$8 309 589†
Bituminous Shale Act	---	0	1 well (600 m*)	$254 900
Underground Storage Act	---	0	---	0

+ includes expenditures from current and previous years
* licenced depth
† value at time of printing (final figure not available)
n/a not available

January , 2003



Geological zones*:
1. Edmundston
2. Kedgwick
3. Tobique–Chaleur; Elmtree
4. Miramichi North (Bathurst Mining Camp); Miramichi South
5. Fredericton; Passamaquoddy
6. Saint John; Fundy Basin
7. Moncton Subbasin (Maritimes Basin)
8. Carboniferous Cover (Maritimes Basin)

* This is a simplification of the terrane map of New Brunswick.

Figure 4. Total number of claims in effect, by geological zone, in 2002.

in September 2002. The informal committee meets for the purpose of sharing information regarding petroleum tenure federally and provincially. In sharing such information, it is hoped that each jurisdiction would, over time, develop similar methods for dealing with tenure matters, making Canada an attractive place to explore and development petroleum resources. This meeting is held in conjunction with the annual meeting of the Canadian Association of Petroleum Landmen.

CONFERENCES Ron Phillips attended the North American Petroleum Expo in Houston, Texas in February, the Prospect Exchange (PEX) in Calgary in April, sponsored by the Canadian Association of Petroleum Landmen. He also attended the Offshore Technology Conference (OTC) in Houston in May. Visits were made to the Offshore/Onshore Technologies Association of Nova Scotia (OTANS) and the Canadian Offshore Resources Exhibition (CORE) in Halifax along with the Ontario Petroleum Institute (OPI) annual conference and trade show in Niagara Falls in the fall.

Resource Approvals

MANAGER, RESOURCE APPROVALS (John Griggs) The Manager, Resource Approvals, is responsible for work of both a specific and general nature relating to mining, quarrying, pipelines and hydrocarbons in New Brunswick. Responsibilities include the permitting and monitoring of mining activities; permitting of oil and gas exploration and production; permitting of pits and quarries; compilation of technical and mining statistics; administration of the *Mining Act, Quarriable Substances Act, Pipe Line Act* and the General Regulation under the *Oil and Natural Gas Act*; review and evaluation of feasibility reports and annual mine plans; compilation of mineral statistics; and administration of projects funded under the provincial Value-Added Mineral Processing (VAMP) Program. In addition to these specific tasks, the Manager, Resource Approvals, liaises with the federal government and other provincial governments on matters related to the mining industry.

During 2002, the Manager, Resource Approvals, monitored mine-related activities and reviewed a number of mine plans received in compliance with the *Mining Act* (Section 25, Regulation 86-98). He also reviewed several issues relating to pits and quarries, as well as applications relating to exploration for oil and natural gas. He was involved in continuing efforts to update Provincial legislation on hydrocarbons. Numerous submissions under the Environmental Impact Assessment Regulation of the *Clean Environment Act* were also reviewed.

Issues requiring the attention of the Manager, Resource Approvals, included a review of the status of Breakwater's Caribou mine (see Figure 9 in Chapter 3 for mine locations), which shut down in August 1998 in response to continuing metallurgical problems and depressed metal prices. Potash Corporation of Saskatchewan–New Brunswick Division (PCS) continued compacting fine-grained material from Saskatchewan at the former Potacan facilities, which were acquired by PCS after flooding caused the closure of Potacan's Cassidy Lake mine (see Figure 9 in Chapter 3) in 1997. PCS maintained grouting and pumping operations at its Penobsquis underground mine in a sustained effort to contain and eliminate a brine inflow first identified in 1998. Environmental monitoring continued at NovaGold Resources Inc.'s Murray Brook mine site, reclaimed in 2000. There was no change in the status of ADEX's Mount Pleasant property, which remained under care and maintenance as the company pursued discussions with potential investors. Noranda's Brunswick mine successfully rehabilitated one of its main production blocks which had been made temporarily inaccessible by severe seismic events. Reclamation activities continue at Noranda's Heath Steele mine, which closed permanently in October 1999 because of depletion of reserves.

HYDROCARBONS ENGINEERING The position of Hydrocarbons Engineer remains open. The incumbent is responsible for the review and approval of new pipelines, changes to existing pipelines, review and permitting of oil and gas operations, and generally ensuring the compliance of pipeline and hydrocarbon drilling and production operations with the legislation.

Pipelines Maintenance and repair on the Coleson Cove (Lorneville) pipeline, 10 km west of Saint John, continued under an established work plan. The pipeline operated normally in 2002.

In 2001, NB Power announced plans to convert the Coleson Cove thermal generating station to an Orimulsion-fuelled facility. The project received approval in 2002. The planned change of fuel and the construction of a new section of pipeline will trigger reviews of the line under the *Pipe Line Act*. Applications to the Public Utilities Board and Department of Natural Resources and Energy under their respective mandates are expected in 2003.

The pipeline delivering fuel to the Dalhousie generating station operated normally in 2002.

Drilling and Production The major companies conducting exploration during 2002 (see Figure 6 in Chapter 2) were Corridor Resources Inc. (Corridor) and farm-in partner EOG Resources Canada Inc. (EOG). The last in a series of three wells was drilled and completed in 2002 by EOG in the McCully area near Sussex. After completion and testing of the three wells (drilled under a farm-in agreement with Corridor), EOG decided to drop its interest in the agreement. The rights to the wells reverted to Corridor, which has stated its intention to do further testing on them and drill additional wells in 2003. In October, Corridor and its partner Potash Corporation of Saskatchewan Inc. (PCS) initiated the construction of twin pipelines and related infrastructure to pipe natural gas from the first two McCully wells to PCS's nearby potash mine. The completion of this project, expected in April 2003, will mark the first flow of locally produced natural gas in the Province since 1991. One seismic survey was conducted by Corridor in the same area. Exploration expenditures from January to December totalled $8 600 000.

Columbia Natural Resources Canada Ltd. (Columbia) persisted in its efforts to find a buyer of its assets. Columbia's exploration strategy was impacted by the merger of Columbia's parent company in the United States with NiSource, a large utility company based in Indiana. In August 2002, Columbia shut in its two Albert County wells indefinitely because of problems that developed while pumping. It is expected that Columbia will attempt to resume operations in at least one of the wells and do further exploration when it has resolved its business affairs.

RECLAMATION ENGINEERING (Cory Neumann) The Reclamation Engineer is responsible for departmental coordination of the reviews of mine reclamation and closure plans, annual reclamation progress inspections, and coordination of the provincial mine approval process as it deals with environmental issues, exploration, and mine site audits. In addition, the reclamation engineer liaises with the federal and provincial governments and industry on matters related to mining and the environment.

Issues requiring the attention of the reclamation engineer during 2002 were the monitoring of Heath Steele mine reclamation, monitoring of the reclaimed Murray Brook mine, and inspecting and approving closure for several mine sites at NB Coal Limited operations (see Figure 9 in Chapter 3 for location of mines). The closure plan for Noranda's Brunswick No.12 mine continued to be reviewed under the provincial Environmental Impact Assessment process. A number of environmental and reclamation issues related to CanZinco's Caribou mine and the idle Mount Pleasant mine were reviewed by the Standing Committee on Mining and Environment. APOCAN's Lake George antimony property remained inactive during 2002.

Mining companies have maintained their reclamation on disturbed land in accordance with their approved schedule. Reclamation and remediation progress is ongoing at several properties, with some moving to final closure.

An abandoned mine opening database was compiled from existing government information to evaluate the risk potential for these types of public hazards. Several historical mining sites were visited and conditions assessed in the field. Field assessment will continue into the next year.

QUARRIABLE SUBSTANCES ADMINISTRATION (Mitchell O'Donnell) The Minister of Natural Resources and Energy controls, through the *Quarriable Substances Act* and Regulation 93-92, the extraction of quarriable substances on Crown lands and that area of the shoreline that lies within three hundred metres above and three hundred metres below the ordinary high water mark.

In 2002, 1 378 473 t of quarriable substances were removed from pits and quarries located on Crown land in New Brunswick (1 232 852 t in 2001). Revenue from royalties amounted to $344 743. There was a total of 242 quarry permits issued resulting in $2420 in application fees. Active quarry lease sites numbered 15, resultingin land rental fees of $26 400.

Major extraction activity occurred from pit and quarries located in the Bois Gagnon, Shaddick Lake, Blue Mountain, Magundy, Blagdon and Belledune areas. Overall, approximately 788 641 t of material was removed from these permitted and leased sites for highway and infrastructure needs.

Forestry companies continued with their forest road construction and maintenance operations. Approximately 147 485 t of material were removed from various pit and quarry sites located on Crown land across the Province for forest road projects.

Other construction needs across the Province resulted in the removal of approximately 416 000 t of material from pits and quarries located on Crown land.

The inventory of Crown land pits and quarries continued in 2002, with approximately 40 new sites being inspected, bringing the total number of inventoried sites to 769.

Twenty-five quarry permits were issued for dredging projects along the coastline. All projects consisted of maintenance dredging within harbour and navigational channel areas. The total amount of material dredged was approximately 210 000 t. Disposal sites for the dredge spoils were dependant upon contamination levels in the material. The spoils were either disposed of in the ocean, used for beach nourishment, stored in containment cells located near wharf areas or disposed of at approved disposal sites inland.

COMMITTEES John Griggs is a member of the Federal–Provincial–Territorial Committee on Mineral Statistics, which coordinates the efforts of Natural Resources Canada and the provincial and territorial governments in the timely collection of relevant mineral statistics while attempting to minimize the burden to the respondent. The annual meeting was held in Ottawa in May, 2002. Cory Neumann is a member of the University of New Brunswick Groundwater Studies Group, which looks at groundwater issues of interest in New Brunswick and the Maritimes and serves as a vehicle for information exchange between different levels of government, educational institutions, research institutions, and the private sector.

John Griggs is a member of the Intergovernmental Working Group. This is a national committee consisting of provincial and federal representatives, which provides input to the federal government regarding research and development programs on mining technology which are of mutual interest to all provinces within Canada.

John Griggs and Cory Neumann are members of the Interdepartmental Standing Committee on Mining and the Environment, which was established in 1989. The committee meets regularly during the year to address mining and environment issues.

CONFERENCES/WORKSHOPS In April 2002, John Griggs participated in the Prospect Exchange held in Calgary, Alberta. Sponsored by the Canadian Association of Petroleum Landmen, this annual event provides a venue for the hydrocarbon industry's various stakeholders to meet, negotiate agreements and promote their investment potential. Also in April, John attended a workshop in Ottawa involving delegates from industry, government agencies and nongovernmental organizations who were invited to offer advice on the future direction of the Mine Environment Neutral Drainage (MEND) program.

Mineral Information Services

This section (Figure 1d), made up of two work units: Geoscientific Support Services and Geoscientific Information Services, is responsible for providing a variety of geoscientific, technical, and support services to the staff of the Minerals, Policy and Planning Division and to the clients of the Department of Natural Resources and Energy. Specifically, the staff (D.J.J. Carroll, C.M. McNeill-Dobbelsteyn, T.L. Leonard, R. Doiron and K. Harichane (contract) provides assistance to the mineral industry and public by supplying publications on the geology and mineral resources of the Province.

Some other responsibilities include publicizing the Division's extensive electronic, hard-copy, and on-line geoscientific databases in addition to promoting mineral exploration activity in New Brunswick. This unit also carries out the collection and collation of mineral exploration expenditures. In addition to providing services to the mineral industry and public sectors, the section provided support services such as graphic and cartographic design to the staff of the Division.

The Mineral Information Services Section continued to work closely with the Public Service Section of the Department to ensure that our clients (mainly mining, mineral exploration and engineering sectors) are continuing to receive quality service when it comes to the acquisition of geoscience publications.

Mineral Information Services prepared six publication notices that were sent to more than 300 clients on our mailing list. These notices publicized 86 plates and 36 geoscience and technical reports. The following is a summary of the contents of the 2002 notices.

March: Timed release: GSC Open File 4112 / NB DNRE Open File 2002-1 – *National Geochemical Reconnaissance: Regional Stream-sediment and Water Data, Central New Brunswick (NTS 21 J/06 and 21 J/10).* Release date: March 19, 2003.
Timed release: Plates 2002-1A,B to 2002-5A,B and Plates 2002-6 to 2002-24 – *High Sensitivity Aeromagnetic Survey Data, Southwestern New Brunswick.* Release date: March 4, 2002.

April: List of new publications available: 25 plates, 10 reports and 1 GSC Open File.
Timed release: Open File 2002-4 – *Till Geochemistry Data for Part of Southwestern New Brunswick (NTS 21 G/6 and 21 G/7).* Release date: May 14, 2002.

May: Timed release: Open File 2002-5 – *Till Geochemistry of the Central and Eastern Parts of the Coldstream (NTS 21 J/06) Map Area, York and Carleton Counties, New Brunswick.* Release date: June 18, 2002.
New Brunswick Prospectors and Developers Association Annual Field Trip 2002 Notice.

July: First notice: 27th Review of Activities. Mailed July 26, 2002.

September: Registration package: 27th Review of Activities. Mailed September 23, 2002.

December: List of new publications available: 30 maps, and 24 reports.

The distribution and sale of geoscientific publications from the Fredericton office in 2002 totalled 2751 documents, a 6.2% decrease from the 2001 total of 2933. More than 32% of the publications sold in 2002 were requested by the mineral industry, hydrocarbon and engineering sectors.

The sale of digital data files in 2002 was down from 2001. This year 9 requests were received from 9 separate clients resulting in approximately 29 digital files being sold and $450 being generated in revenue. This total revenue figure represented a 34% decrease from 2001 sales.

Revenue generated from the sale of publications and photocopies for all three Division offices (Bathurst, Fredericton, Sussex) in 2002 was $17 517 a 9.9% decrease from 2001.

MINERAL EXPLORATION REPORTS OF WORK A total of 99 mineral exploration reports of work were filed with the Resource Allocation Section in 2002, which represented a 3% increase from the 96 reports submitted in 2001. The dollar value of work reported in these documents ($5 739 360) was up 2% from that reported in the previous year ($5 608 576). To date, 5603 reports of work have been filed with the Resource Allocation Section. They are maintained by Mineral Information Services.

The Mineral Exploration Reports of Work or more commonly called assessment file reports, are one of the key information sources that have been indexed for inclusion in the Geoscience Publication Index System, now available on-line.

ANNUAL EXPLORATION SURVEYS Mineral exploration expenditure surveys are carried out by Natural Resources Canada, assisted by the New Brunswick Department of Natural Resources and Energy (Mineral Information Services Section). The exploration expenditures are collected through two surveys each year. The Preliminary/Forecast expenditure survey in September was followed by the Actual survey in January. Table 3 summarizes the results of the most recently available surveys. Figure 5 presents historical data on mineral exploration expenditures for New Brunswick.

Table 3. Summary of Mineral Exploration Expenditure Surveys
(Source: Natural Resources Canada)

Form No.	Survey Name	Number Surveyed	General Exploration	Mine Site Exploration	Total*
Ex-1	Preliminary '01	56**	$ 6 200 000	$ 2 100 000	$8 300 000
Ex-3	**Actual '01**	**52**	**7 200 000**	**2 200 000**	**9 400 000**
Ex-1	Forecast '02	56**	2 200 000	1 100 000	3 300 000
Ex-1	Preliminary '02	00	2 900 000	nil	2 900 000
Ex-3	Actual '02	00	3 200 000	nil	3 200 000
Ex-1	Forecast '03	00	1 700 000	nil	1 700 000

n/a not available
* survey includes overhead expenditures
** Individual claim holders grouped and survey results combined on one form

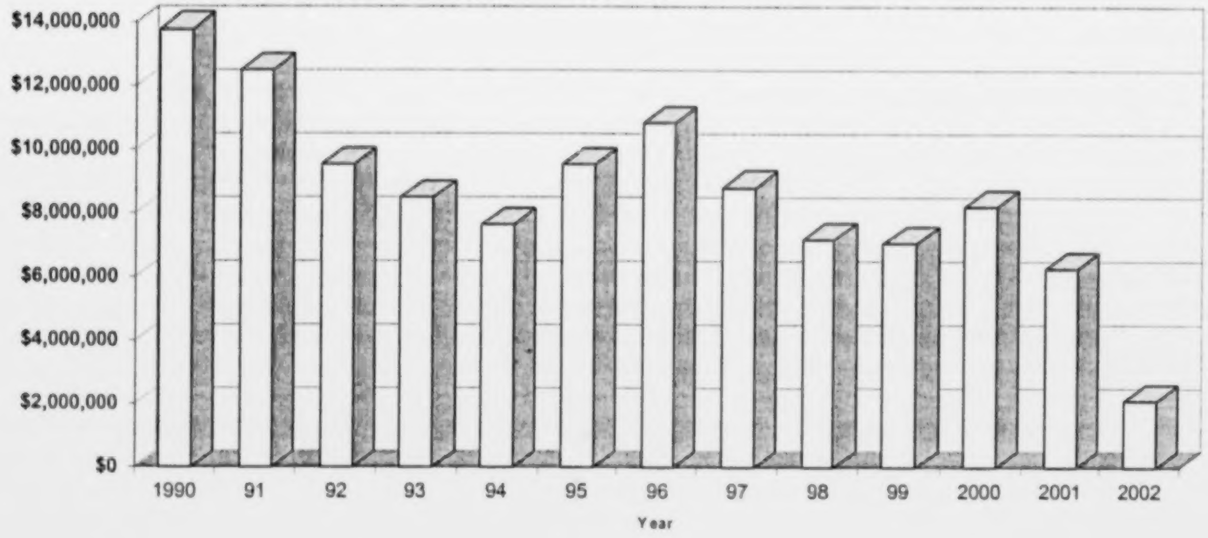


Figure 5. Total annual expenditures (general and mine-site exploration, includes overhead) by mining and exploration companies in New Brunswick, 1990 to 2002. Source: Natural Resources Canada ($1986=100).

PUBLIC AWARENESS / PROMOTION The Mineral Information Section is responsible for publicizing the Minerals, Policy and Planning Division's extensive geoscience information base and encouraging investment in our provincial mineral resources. Meetings such as the 2002 Annual Cordilleran Exploration Roundup in Vancouver, the 70th Annual International Convention and Trade Exhibition of the Prospectors and Developers Association of Canada in Toronto (March) and the Division's 27th annual Review of Activities in Fredericton (November) continue to be the main targets of our promotion campaign in 2002.

Attendance at the Annual Cordilleran Exploration Roundup in Vancouver (January 21-26, 2002) by two staff members, Malcolm McLeod and Don J.J. Carroll, represented the seventh opportunity for the Division to tap into the western Canadian market as part of its promotional strategy to attract mineral exploration investment dollars to New Brunswick.

In addition to Division staff, the New Brunswick delegation at the Cordilleran Roundup included Wayne Lockhart, George Murphy and Mike Taylor. The Department of Natural Resources and Energy financially supported three prospectors (Dave Stevens, Rufus Smith and Emilio Doiron) to attend the Roundup.

The second major conference that the Division attended in 2002 was the Annual International Convention and Trade Exhibition of the Prospectors and Developers Association of Canada (PDAC), which was held in Toronto on March 10-13. Once again, the venue for the Trade Exhibition was the Metro Convention Centre. The focus of the New Brunswick display this year was two-fold, to provide information on gold environments in New Brunswick and to promote exploration in the Bathurst Mining Camp.

The Geological Surveys Branch also continued its efforts to financially assist members of the New Brunswick Prospectors and Developers Association (NBPDA) whose mineral properties warrant broader attention and publicity. This year, six prospectors, Peter Fenety, Delbert and Tony Johnston, K.D.A. Whaley, Bill Gardiner, Raymond Thorn and Frank Ross were provided financial support to attend this year's PDA conference.

In 2002, companies highlighting New Brunswick properties in the Investor's Exchange at the PDA convention in Toronto included Freewest Resources Canada Inc. and Eastmain Resources Inc.

ADVERTISEMENTS/EDITORIALS An article, titled 'Bathurst Camp and Clarence Stream Take Centre Stage" was published in the PDA special publication "Exploration and Development Highlights" (March 2002). As part of a new promotional campaign to focus attention on New Brunswick, a half-page advertisement featuring three of New Brunswick's prospectors was run in the *Northern Miner* about two weeks before the conference; the advertisement encouraged people to drop by the Atlantic Canada Rock Room, in particular the New Brunswick booth.

REVIEW OF ACTIVITIES In 2002, the Minerals, Policy and Planning Division hosted the 27th annual Review of Activities (November 5-7, 2002) at the Sheraton Hotel in Fredericton; attendance at this year's event was 234 delegates.

The Review of Activities was to have commenced with a pre-conference geological field trip to southwestern New Brunswick (*"Gold Mineralization in Ordovician Rocks of the Rollingdam Area, Southwestern New Brunswick")* and a geological field trip to northern New Brunswick *("Geological Setting of the Brunswick # 6 and # 12 Massive Sulphide Deposits, Northern New Brunswick")*. Because of an early snow storm, both field trips were cancelled.

A replacement program was quickly assembled with Mike Milner and Dallas Davis pitching in to present a workshop for the field trip delegates. Mike's talk and demonstration was titled *"Heavy Mineral Sampling on South American DiamondJigs and Conical Batea (Pan)"*.

The 27th Annual Review of Activities began on Tuesday evening with the traditional Trade Show reception hosted by Business New Brunswick. This was also a time for delegates to mingle amongst the various poster displays and to discuss research/fieldwork with the exhibitors.

The first social event of the conference was called, "The Prospectors Place." This event provided an opportunity for delegates to mingle and network with their colleagues. It was sponsored by Activation Labs Ltd and BAP Equipment. Isaac and Blewett, musicians from the Alma area of New Brunswick provided entertainment.

The technical program offered the delegates a cross section of talks by approximately 35 presenters from the mineral and hydrocarbon exploration and mining industry; the federal, provincial, and state governments; universities; and geoscience organizations.

The opening speakers (Wednesday, November 6) were the Hon. Jeannot Volpé (Minister of Natural Resources and Energy), R. Allen (Volcanic Resources Limited), J. Verhoef (Geological Survey of Canada), C. Freeman (eNB.ca and Innovation), and Les Fyffe (Director of the New Brunswick Geological Surveys Branch). Steve McCutcheon and Malcolm McLeod gave updates on the activities in the northern and southern regions of New Brunswick; the final presentations of the morning were by Clinton St. Peter (hydrocarbons) and Tim Webb (industrial minerals). All are staff of the Geological Surveys Branch. The afternoon technical session consisted of talks by several members of staff (Geological Surveys Branch), C. Stanley (Acadia University), R. Allen (Volcanic Resources Limited), J. Peter and W. Goodfellow (Geological Survey of Canada), and S. McClenaghan (University of New Brunswick).

The traditional Wednesday evening banquet, attended by more than 140 individuals, featured Gordon Fader (GSC-Atlantic) as guest speaker, who spoke on the topic of "Parting the Waters with Multibeam Bathymetry."

On Thursday morning, November 7, the geological presentations continued with several speakers, including staff members (New Brunswick Geological Surveys Branch), P. Wilson and X. Yang (University of New Brunswick), M.S. King (Acadia University) and S. Castonguay (Geological Survey of Canada).

A special Mineral Industry Investment Forum was held on Thursday afternoon. This session, moderated by Dallas Davis, consisted of several speakers offering their comments and insights into the complexities associated with raising the necessary funds (venture capital) for exploration and development of mineral properties. The forum also provided a venue for the presentation of information on the various funding vehicles available to the exploration industry in New Brunswick. The panel of experts assembled for the forum and their presentation title included:
(1) W. S. (Steve) Vaughan (McMillan Binch) – "Financing the Mineral Industry in the New Millennium"
(2) Mackenzie (Mac) I. Watson, P. Eng. (Freewest Resources Canada Inc.) – "Insights from The Financing Experience of Freewest Resources Canada Inc."
(3) Michael (Mike) R. Taylor, P. Geo. (Slam Exploration Ltd.) – "Lessons from Financing Exploration through Public and Private Vehicles in New Brunswick"
(4) Peter Klohn (Stewart, McKelvey, Stirling, Scales) – "Mineral Industry Financing from a New Brunswick Legal Perspective"
(5) Peter Taylor (Union Securities Ltd.) – "Mineral Industry Financing from the Perspective of an Intermediary".

More than 50 exhibits and posters were displayed by federal and provincial government agencies, the mineral industry, prospectors, service companies, and the various associations. Once again, the New Brunswick Core Shack provided prospectors and junior mining companies with an opportunity to promote their mineral properties in New Brunswick.

The annual Review of Activities also provides an opportunity for mineral-related groups or associations to hold meetings; for example, the New Brunswick Prospectors and Developers Association met with its membership and the Geological Survey of Canada and New Brunswick Department of Natural Resources and Energy held a meeting.

PUBLIC AWARENESS – Minerals Matter/Parlons Minéraux One of the major public events in New Brunswick is the annual Atlantic Hot Air Balloon Fiesta in Sussex, New Brunswick. In 2002, it provided an excellent opportunity and venue to exhibit mineral-related information of interest to the general public. It was a cooperative public awareness effort between the New Brunswick Department of Natural Resources and Energy and various New Brunswick mineral–prospecting associations.

Seizing on the previous year's positive results, the decision was made in 2002 to stage a "Minerals Matter/Parlons Minéraux" public awareness event in cooperation with the New Brunswick Mining Association, New Brunswick Prospectors and Developers Association (NBPDA) and the New Brunswick Museum. A large exhibition tent was rented that housed the exhibits of the NBPDA, Department of Natural Resources and Energy, Hans Durstling, and Tony Campbell. More than 1000 people visited the tent.

CONFERENCES / WORKSHOPS Don J.J. Carroll participated in the Annual Cordilleran Exploration Roundup in Vancouver, British Columbia in January and the Annual International Convention and Trade Exhibition of the Prospectors and Developers Association of Canada in Toronto, Ontario in March. He also attended the Manitoba Minerals Conference and the Quebec GeoResearch Conference as a delegate in November.

Mr. Carroll was also in charge of organizing the Division's annual Review of Activities, held in Fredericton in November.

MINE TAXATION

Reporting to the Director of Financial Services, the Mine Assessor, Tanis A. Taylor, is responsible for the collection of all revenue due the province from mineral taxation and royalties.

The Mine Assessor is responsible for the administration of various Acts as they relate to the collection of taxes and royalties due the province, and is required to provide estimates for Central Government regarding the amount of revenue expected from each source. The Acts involved are: *Metallic Minerals Tax Act*, *Mining Act*, *Quarriable Substances Act*, and *Oil and Natural Gas Act*. Taxes and royalties collected in 2002–2003 amounted to $12 581 100. The metal mines subject to the *Metallic Minerals Tax Act* are required to make monthly payments, based on an estimate of the amount of taxes owing, and submit an annual tax return within six months of their year end. These annual returns are audited and assessment notices are issued. On-site audits as well as desk audits are conducted on companies subject to the *Metallic Minerals Tax Act* to determine compliance with the Act. On-site audits are also conducted on producers of other commodities to determine compliance with the appropriate acts.

Royalties are collected as follows: Monthly—coal, natural gas; Quarterly—potash, salt, oil; Semi-annually—peat moss, sand and gravel.

Provincial Mine Assessors and Mineral Revenue Assessors hold an annual conference in order to discuss matters of mutual concern associated with mineral taxation and collection.

MINING COMMISSIONER'S REPORT

Mr. John D. Hazen [P.O. Box 690, 132 Main Street, Bathurst, New Brunswick, E2A 3Z6; Telephone (506) 545-9220; Fax (506) 545-9224].

No disputes were brought before the Mining Commissioner in 2002.

MINERALS, POLICY AND PLANNING DIVISION PUBLICATIONS

Reports

Biomet Mining Corporation. 2002. The BioSulphide Process to treat acid mine drainage and Anaconda tailings at Caribou Mine, New Brunswick. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-3, 138 p.

Carroll, B.M.W. (editor) 2002. Preliminary review of New Brunswick's mineral industry, 2001. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Mineral Resource Report 2002-1, 22 p.

Carroll, B.M.W. (rédactrice) 2002. Rétrospective préliminaire de l'industrie minérale au Nouveau-Brunswick, 2001. Ministère des Ressources naturelles et de l'Énergie du Nouveau-Brunswick; Division des minéraux, des politiques et de la planification, Rapport sur les ressources minerals 2002-2, 25 p.

Carroll, B.M.W. (editor) 2002. New Brunswick's mineral industry, 2001. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Mineral Resource Report 2002-3, 116 p.

Carroll, B.M.W. (editor) 2002. Current Research 2002. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Mineral Resource Report 2002-4, 221 p.
S.M. Barr, C.E. White, M.A. Hamilton Middle Devonian quartz monzonite from Gaytons quarry and Lower Coverdale drill core, Moncton area, New Brunswick.
D. Cranstone The discovery and mining of massive zinc–lead–copper–silver sulphide deposits in New Brunswick — past and future.
D.R. Lentz, K.G. Thorne, X. Yang, M. Adams Shoshonitic lamprophyre dykes at the Lake George antimony deposit, New Brunswic: petrochemical characteristics and implications for gold mineralization.
D.R. Lentz, K. Thorne, X. Yang Preliminary analysis of the controls on the various episodes of gold mineralization at the Lake George antimony deposit, New Brunswick.
A.A. Seaman Surficial geology and till geochemistry of the eastern two-thirds of the Coldstream (NTS 21 J/06) map area, York and Carleton counties, New Brunswick.
J.A. Walker The Upsalquitch–Dungannon Zn–Pb–Ag–Cu occurrence, Bathurst Mining Camp, New Brunswick (NTS 21 O/08W).
P. Wilson Structural geology of the Albert Mines–Taylor Village area, southeastern New Brunswick.
R.A. Wilson Geology of the Squaw Cap area (NTS 21 O/15d, e, f), Restigouche County, New Brunswick.

Carroll, D.J.J., Wandless, P., McNeill-Dobbelsteyn, C.M. 2002. Publications: Available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division (1995-), Supplementary List, 141 p. / Publications : Publications que les intéressés peuvent obtenir auprès du ministère des Ressources naturelles et de l'Énergie du Nouveau-Brunswick, Division des ressources minières et de l'énergie (1995-), List supplémentaire, 141 p.

Dickson, M.L. 2002. Drift prospecting and Quaternary geology in the Atholville and Charlo map area, northern New Brunswick. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-9, 171 p.

Friske, P.W.B., Pronk, A.G., Day, S.J.A., McCurdy, M.W., Boldon, R., and McNeil, R.J. 2002. National Geochemical Reconnaissance: regional stream sediment and water geochemical data, central New Brunswick (NTS 21 J/11 East and 21 J/15 West). New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-6, CD-ROM / Geological Survey of Canada, Open File 4410, CD-ROM.

Friske, P.W.B., Pronk, A.G., McCurdy, M.W., Day, S.J.A., McNeil, R.J., and Boldon, R. 2002. National Geochemical Reconnaissance: regional stream sediment and water data, central New Brunswick, NTS 21 J/06 and 21 J/10. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File 2002-1, CD-ROM / Geological Survey of Canada, Open File 4112, CD-ROM.

Pronk, A.G., Boldon, G.R., and Allard, S. 2002. Till geochemistry and field data of the Rollingdam (NTS 21 G/06) and McDougall Lake (NTS 21 G/07) map areas, southwestern New Brunswick. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-4, digital file.

Seaman, A.A. 2002. Till geochemistry of the central and eastern parts of the Coldstream (NTS 21 J/06) map area, York and Carleton counties, New Brunswick. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-5, 80 p.

Seaman, A.A. 2002. Till geochemistry of the McAdam (NTS 21 G/11) map area, York County, New Brunswick: site and geochemical data. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-8, digital files.

Thorne, K., McLeod, M., Fyffe, L., Ravenelle, J.-F., Lutes, G., Hoy, D., Castonguay, S. and Watters, S. 2002. Gold mineralization in Ordovician rocks of the Rollingdam area in southwestern New Brunswick. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-7, 21 p.

Webb, T.C. 2002. Geology, development history, and exploration alternatives for gypsum near Plaster Rock (part of NTS 21 J/14), Victoria County, northwestern New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File 2001-3, 29 p.

Webb, T.C. 2002. Geology, development history, and exploration alternatives for gypsum and anhydrite resources in the Wilson Brook–Demoiselle Creek area (NTS 21 H/15), southeastern New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File 20001-4, 33 p.

Webb, T.C. 2002. Geology, development history, and exploration alternatives for gypsum and anhydrite near Sussex (part of NTS 21 H/12 and 21 H/13), Kings County, south-central New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File 2001-5, 39 p.

Webb, T.C. 2002. Geology, development history, and exploration alternatives for gypsum and anhydrite resources near Hillsborough (part of NTS 21 H/15), Albert County, southeastern New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File 2001-6, 47 p.

Webb, T.C. 2002. Geology, development history, and exploration alternatives for gypsum in the Intervale–Hillgrove area (part of NTS 21 H/14), Westmorland County, New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File 2001-7, 25 p.

WEBB, T.C. 2002. Geology, development history, and exploration alternatives for gypsum resources at Cape Maringouin (parts of NTS 21 H/10, 21 H/15 and 21 H/16), Westmorland County, southeastern New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File 2001-8, 19 p.

W.J. WILSON AND ASSOCIATES LTD. 2002. New process for industrial minerals. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Open File 2002-2, 75 p.

Plates (see List of Publications for details)

NR-7 (1 map)
Metallogenic map of New Brunswick. Scale: 1:500 000.

NR-8 (1 map)
Generalized surficial geology map of New Brunswick / Carte généralisée de dépôts superficiels du Nouveau-Brunswick. V.N. Rampton (1984).

Plate 88-189 (1 map)
Geology of the Beaconsfield area (NTS 21 G/06e), Charlotte County, New Brunswick. L.R. Fyffe. (1988, revised 2002). [Scale: 1:20 000]

Plates 89-126, 89-206 to -211, 89-213, 89-214, 89-131 to -133 (12 profiles)
Chevron Canada Resources Limited seismic lines, Moncton Basin. (1984). [portions of seismic lines over the Stoney Creek field have been released from confidentiality.]

Plate 90-145 (1 map)
Geology of the Little Ridge area (NTS 21 G/03e), Charlotte County, New Brunswick. L.R. Fyffe. (1990, revised 2002). [Scale: 1:20 000]

Plate 90-146 (1 map)
Geology of the Moores Mills area (NTS 21 G/06c), Charlotte County, New Brunswick. L.R. Fyffe. (1990, revised 2002). [Scale: 1:20 000]

Plate 90-147 (1 map)
Geology of the Scotch Ridge area (NTS 21 G/06d), Charlotte County, New Brunswick. L.R. Fyffe. (1990, revised 2002). [Scale: 1:20 000]

Plate 90-150 (1 map)
Geology of the Potters Lake area (NTS 21 G/03f), Charlotte County, New Brunswick. L.R. Fyffe. (1991, revised 2002). [Scale: 1:20 000]

Plate 91-35 (1 map)
Geology of the Tower Hill area (NTS 21 G/06b), Charlotte County, New Brunswick. L.R. Fyffe. (1991, revised 2002). [Scale: 1:20 000]

Plate 92-31(1 map)
Geology of the Flume Ridge area (NTS 21 G/06h), Charlotte County, New Brunswick. L.R. Fyffe. (1991, revised 2002). [Scale: 1:20 000]

Plates 95-8 and 95-9 (2 maps)
Carboniferous geology, Westmorland County. S.C. Johnson. (1995, revised 2002). Plate 95-8 (NTS 11 L/04), Plate 95-9 (21 I/01). [Scale: 1: 50 000]

Plate 97-5 (1 map)
Geology of the Sorrel Ridge area (NTS 21 G/06a), Charlotte County, New Brunswick. L.R. Fyffe. (1997, revised 2002). [Scale: 1:20 000]

Plates 97-7 to 97-10 (4 maps)
Carboniferous geology, Albert and Westmorland counties. (1997, revised 2002). Plate 97-7(NTS 21 I/02, S.C. Johnson and C. St. Peter), Plate 97-8 (21 H/15, C. St. Peter and S.C. Johnson), Plate 97-9 (21 H/16, S.C. Johnson), Plate 97-10 (21 H/10, C. St. Peter). [Scale: 1: 50 000]

Plate 97-16 (1 map)
Geology of the Lawrence Station area (NTS 21 G/06g), Charlotte County, New Brunswick. L.R. Fyffe. (1997, revised 2002). [Scale: 1:20 000]

Plate 97-17 (1 map)
Geology of the Canoose Flowage area (NTS 21 G/06f), Charlotte County, New Brunswick. L.R. Fyffe. (1997, revised 2002). [Scale: 1:20 000]

Plate 97-32 (1 map)
Geology of the Oak Bay area (NTS 21 G/03g), Charlotte County, New Brunswick. L.R. Fyffe. (1997, revised 2002). [Scale: 1:20 000]

Plate 2000-29 (1 map)
Geology of the Grand Manan Island (parts of NTS 21 B/10 and B/15), New Brunswick. L.R. Fyffe and R.H. Grant (2000, revised 2002). [Scale: 1:50 000]

Plate 2000-31 (1 map)
Carboniferous geology and gypsum/anhydrite resources of the Hillsborough area (part of NTS 21 H/15), Albert County, southeastern New Brunswick. T.C. Webb. [Scale: 1: 10 000]

Plate 2001-1 (1 map)
Carboniferous geology and gypsum resources of the Wilson Brook–Demoiselle Creek area (part of NTS 21 H/15), Albert County, southeastern New Brunswick. T.C. Webb. [Scale: 1: 10 000]

Plate 2001-2 (1 map)
Carboniferous geology and gypsum resources of the Intervale–Hillgrove area (part of NTS 21 H/14), Westmorland County, southeastern New Brunswick. T.C. Webb. [Scale: 1: 10 000]

Plate 2001-25 (1 map)
Carboniferous geology and gypsum resources of the Plaster Rock area (part of NTS 21 J/14), Victoria County, northwestern New Brunswick. T.C. Webb. [Scale: 1: 20 000]

Plate 2001-48 (1 map)
Bedrock geology of the Springfield area (NTS 21 H/12f), southern New Brunswick. S.C. Johnson. [Scale: 1:20 000]

Plates 2002-1A & B to 2002-5A & B (10 maps)
High-sesitivity aeromagnetic survey data, southwestern New Brunswick [Geological Survey of Canada Open File 4207 to 4216]/Données tirées des levés aéromagnétique de haute sensibilité, Sud-Ouest du Nouveau-Brunswick (Commission géologique du Canada, dossier public 4207 to 4216]. (21 G/02, 03, 06, 07, 10). F. Kiss, M. McLeod, P. Rennick. [Scale/Échelle : 1 :50 000]

Plates 2002-6 to 2002-24 (19 maps)
High-sesitivity aeromagnetic survey data, southwestern New Brunswick/Données tirées des levés aéromagnétique de haute sensibilité, Sud-Ouest du Nouveau-Brunswick (21G/02a–h, 21G/03a–f, 21 G/06a–h, 21G/07a–h, 21G/10a–h). [Scale/Échelle: 1:20 000]

Plate 2002-25 (1 map)
Coastline changes in The anchorage Provincial Park, Grand Manan Island, New Brunswick, between 1945 and 2001 / Déplacement de la ligne de côte dans le parc provincial The Anchorage, île de Grand Manan, Nouveau-Brunswick entre 1945 et 2001 (part of NTS 21 B/10 / partie de SNRC 21 B/10). D. Bérubé, L. Olsen, P. Evans. [Scale/Échelle: 1:13 500].

Plate 2002-26 (1 map)
Déplacement de la ligne de côte sédimentaire de cap de Richibouctou-flèche de Bouctouche, Nouveau-Brunswick, entre 1945 et 2000/2001 / Coastline changes in the sediment cell of Richibouctou Cape-Bouctouche Spit, New Brunswick between 1945 and 2000/2001. (partie de SNRC 21 I/07 / part of NTS 21 I/07). M. Giangioppi, D. Bérubé, P. Evans. [Scale/Échelle: 1:25 000]

Plate 2002-27 (1 map)
NTS grid overlaying bedrock geology of New Brunswick. [Scale/Échelle: 1:600 000]

Plate 2002-28 (1 map)
Au, As, and Sb in stream sediments of the St. George map area (NTS 21 G/02), southwestern New Brunswick. A. G. Pronk, P.W.B. Friske and M. P. Rennick. [Scale/Échelle: 1:50 000]

Plate 2002-29 (1 map)
Au, As, and Sb in stream sediments of the St. Stephen map area (NTS 21 G/03), southwestern New Brunswick. A. G. Pronk, P.W.B. Friske and M. P. Rennick. [Scale/Échelle: 1:50 000]

Plate 2002-30 (1 map)
Au, As, and Sb in stream sediments of the Rollingdam map area (NTS 21 G/06), southwestern New Brunswick. A. G. Pronk, P.W.B. Friske and M. P. Rennick. [Scale/Échelle: 1:50 000]

Plate 2002-31 (1 map)
Au, As, and Sb in stream sediments of the McDougall Lake map area (NTS 21 G/07), southwestern New Brunswick. A. G. Pronk, P.W.B. Friske and M. P. Rennick. [Scale/Échelle: 1:50 000]

Plate 2002-32 (1 map)
Au, As, and Sb in stream sediments of the Fredericton Junction map area (NTS 21 G/10), southwestern New Brunswick. A. G. Pronk, P.W.B. Friske and M. P. Rennick. [Scale/Échelle: 1:50 000]

Plate 2002-33 (1 map)
Bedrock geology of the McCully natural gas field area, Moncton Subbasin (part of NTS 21 H/11, 12, 13 and 14), New Brunswick. C. St. Peter. [Scale: 1:50 000]

Plate 2002-34 (1 map)
Map of Stoney Creek field showing status of wells and boundaries of oil and gas pools. (part of NTS 21 H/15). C. St. Peter. [Scale: 1:25 000]

Plate / Planche 2002-35A & B (2 maps / cartes)
Storm erosional and depositional features of Bouctouche Spit, southeast coast of New Brunswick: (A) between 1945 and 1971, (B) between 1973 and 2000. (part of 21 I/07). / Formes et dépôts de tempête de la flèche de Bouctouche, côte sud-est du Nouveau-Brunswick: (A) entre 1945 et 1971, (B) entre 1973 et 2000. (partie de 21 I/07). M. Giangioppi, D. Bérubé, P. Evans. [Scale/Échelle : 1: 10 000]

Plate 2002-36A (1 map)
Au, Sb, As and Cu in tills of the Rollingdam map area (NTS 21 G/06), southwestern New Brunswick. A.G. Pronk, G.R. Boldon and S. Allard. [Scale: 1:50 000]

Plate 2002-36B (1 map)
Au, Sb, As and Cu in tills of the McDougall Lake map area (NTS 21 G/07), southwestern New Brunswick. A.G. Pronk, G.R. Boldon and S. Allard. [Scale: 1:50 000]

Plate 2002-37 (1 map)
Major mineral developments in New Brunswick. B.M.W. Carroll (compiler). [page-size]

Plate 2002-38A (1 map)
Geology and gold occurrences, Clarence Stream area, southwestern New Brunswick (NTS 21 G/07and parts of 21 G/02, 03, 06, 10, 11). M.J. McLeod, and L.R. Fyffe. [Scale: 1: 100 000]

Plate 2002-38B (1 map)
Gold metallogeny, southwestern New Brunswick. M.J. McLeod and L.R. Fyffe. [Scale: 1:1 000 000]

Plate 2002-51 (1 map)
Evolution of the Cocagne Bar, on the southeast coast of New Brunswick, between 1839 and 2001 (part of NTS 21 I/07) / Évolution de la barre de Cocagne, sur la côte sud-est du Nouveau-Brunswick, entre 1839 et 2001 (partie de SNRC 21 I/07). D. Bérubé, S. O'Hearn, M. Giangioppi, P. Evans. [Scale / Échelle : 1:13 500]

Plate 2002-52 (1 map)
Geology of the Clarence Stream are (NTS 21 G/07d), Charlotte County, New Brunswick. L.R. Fyffe and K.G. Thorne. [Scale: 1:20 000]

Plate 2002-55 (1 map)
Geology of the Madran area (NTS 21 P/13b–d), Northumberland County, New Brunswick. J.P. Langton, J.A. Walker, S.J. Gover. [Scale: 1:20 000]

Plate 2002-58 (1 map)
Detailed bedrock geology of the Poplar Mountain gold deposit (part of NTS 21 G/13), York County, New Brunswick. S. Watters and G. Chi. [Scale: 1:2500]

Conference Papers and Posters Presented by Division staff

BÉRUBÉ, D. 2002. Coastal erosion in New Brunswick - an update on cliffs, dunes, beaches and marshes. Paper presented at the 2nd Annual Meeting of the Southern Gulf of St. Lawrence Coalition onSustainability, Miramichi, New Brunswick.

BÉRUBÉ, D. 2002. The evolution of Cocagne Bar, on the southeast coast of New Brunswick, between 1839 and 2001. Paper presented at the 5th Annual Conference of the Northeast Shore and Beach Preservation Association, Woods Hole, Massachusetts.

BROSTER, B.E., DICKSON, M.L., and PARKHILL, M.A. 2002. Humus as a sampling media for mineral prospecting in glaciated areas; an example from the Popelogan area of northeastern New Brunswick (abstract). Atlantic Geology, **38**: 77.

CARROLL, B.M.W. (editor/rédactrice) 2002. Abstracts, 2002: 27th annual Review of Activities / Résumés, 2002 : 27e rétrospective annuelle des activités. New Brunswick Department of Natural Resources and Energy; Minerals, Policy and Planning Division, Information Circular 2002-1, 81 p. / Ministère des Ressources naturelles et de l'Énergie du Nouveau-Brunswick, Division des minières, des politiques et de la planification, circulaire d'informaltion 2002-1, 81 p.
S. Allard, P. Rennick New contouring and surface mapping capabilities / Capacités nouvelles de cartographie de surface et d'établissement de cartes en courbes de niveau.
R.S. Black, S.M. Barr, L.R. Fyffe, B.V. Miller Grand Manan Island, New Brunswick: a piece of the puzzle or just a puzzling piece? / L'île Grand Manan, au Nouveau-Brunswick : un morceau du casse-tête ou simplement un casse-tête?
J.I. Carroll Geology of the Kedgwick, Gounamitz River, States Brook and Menneval map areas (NTS 21 O/11, 21 O/12, 21 O/13 and 21 O/14), Restigouche County, New Brunswick / Géologie des secteurs cartographiques de Kedgwick, de la rivière Gounamitz, du ruisseau States et de Menneval (SNRC 21 O/11, 21 O/12, 21 O/13 et 21 O/14), comté de Restigouche, Nouveau-Brunswick.
S. Castonguay, D. Lavoie, M. Malo, A. Tremblay, D. Brisebois, K. Lauzière, J. Dietrich, J. Carroll, R. Wilson, D. Lebel, S. McCutcheon, S. Coleman-Sadd Appalachian foreland and platform architecture in Quebec, New Brunswick and Newfoundland: report of progress of The Geological Bridges of Eastern Canada / Architecture de la plate-forme et du bassin avant-pays des Appalaches au Québec, Nouveau-Brunswick et Terre-Neuve : rapport de progrès des ponts géologiques de l'Est du Canada.

A.E. Daigle, B.E. Broster Three-dimensional stratigraphic architecture of valley-fill deposits at Fredericton, New Brunswick, as delineated from existing borehole logs / Architecture stratigraphique tridimensionelle des dépôts de remblayage de la vallée délimités au moyen de rapports de forage existants, à Fredericton (Nouveau-Brunswick).

I. Dimitrov Possible gravitational collapse structures in the Nigadoo River Synclinorium, northern New Brunswick / Structures d'affaissement gravitationnel possibles dans le synclinorium de la rivière Nigadoo, dans le Nord du Nouveau-Brunswick.

W.S. Downey, S.R. McCutcheon, D.R. Lentz Little Falls Member, a distal facies of the Nepisiguit Falls Formation, Tetagouche Group, Bathurst Mining Camp, northern New Brunswick / Membre de Little Falls, faciès distal de la Formation de Nepisiguit Falls, groupe de Tetagouche, Camp minier de Bathurst, Nord du Nouveau-Brunswick.

R.S. Hiebert, S.M. Barr, T.A. Grammatikopoulos Petrology of the Mechanic Settlement Pluton, southern New Brunswick, and potential for economic platinum-group-element mineralization / Pétrologie du pluton de Mechanic Settlement, dans le Sud du Nouveau-Brunswick, et potentiel de minéralisation économique de métaux du groupe du platine.

S.C. Johnson, W.W. Gardiner Conceptual models and potential gold environments in Carboniferous rocks of New Brunswick / Modèls conceptuels et environnements aurifères possibles dans des roches Carbonifères du Nouveau-Brunswick.

D. Keighley New evidence of compressional tectonics in the Carboniferous of southern New Brunswick / Nouvelles observations confirmant un régime tectonique de compression dans la zone Carbonifère du Sud du Nouveau-Brunswick.

M.S. King, S.M. Barr Application of gravity and magnetic data to granite-related gold mineralization in southern New Brunswick / Application de données gravimétriques et magnétiques à une minéralisation aurifère apparentée à un granite dans le Sud du Nouveau-Brunswick.

J. Langton, P. Rennick The new Minerals, Policy and Planning Division web site and interactive map system / Le nouveau site Web de la Division des minéraux, des politiques et de la planification, et le système cartographique interactif.

J. Langton, M. McLeod, S. McCutcheon, M. Parkhill New Brunswick opportunities: gold and base-metal potential / Possibilités à exploiter au Nouveau-Brunswick : réserves potentielles d'or et de métaux communs.

D.R. Lentz, X.-M. Yang, K. Thorne Petrogenesis of gold mineralization at the Lake George antimony deposit, New Brunswick: geochemical evidence / Pétrogenèse de la minéralisation aurifère du gîte d'antimoine du lac George, au Nouveau-Brunswick : observations géochimiques.

K.A. MacCarthy, M.P. Rennick Metadata catalogue of New Brunswick geoscience data / Métacatalogue des données géoscientifiques du Nouveau-Brunswick.

S.H. McClenaghan, D.R. Lentz Rare-earth-element systematics of massive sulphide deposits in the Bathurst Mining Camp, New Brunswick: exploration to petrogenetic implications / Taxinomie des éléments des terres rares des gîtes du sulfures massifs du Camp minier de Bathurst, au Nouveau-Brunswick : de l'exploration aux répercussions pétrogénétiques.

D.J. Mossman Organic matter, hydrocarbon generation, and ore deposition—lessons from the Paleoproterozoic / Matière organique, production d'hydrocarbures et dépôt de minerai – leçons du Paléoprotérozoïque.

M.A. Parkhill, J.P. Armstrong Drift prospecting methods: a review of selected Candian case studies and the available New Brunswick database / Méthodes de prospection glacio-sédimentaire : examen d'études de cas canadiens choisies, et base de données du Nouveau-Brunswick.

T.Pronk, S. Allard, R. Boldon Regional till geochemistry in southwestern New Brunswick and implications for mineral exploration / Géochimie régionale du till dans le Sud-Ouest du Nouveau-Brunswick et répercussions sur l'exploration minérale.

M.P. Rennick, S.A. Johnson, W.W. Gardiner, M.J. McLeod Compilation of historical data on geology, mineral exploration and mining in New Brunswick / Compilation de données historiques sur la géologie, l'exploration minérale et l'extraction minière au Nouveau-Brunswick.

A.A. Seaman Which way did it go? Glacial dispersal in central New Brunswick / Quel trajet la dispersion glaciaire dans le Centre du Nouveau-Brunswick a-t-elle suivi?

E.A. Smith Southern New Brunswick Fossil Database Project / Projet d'une base de données sur les fossiles du Sud du Nouveau-Brunswick.

C. St. Peter Identifying the unconformity between the Horton and Sussex groups in the Moncton area, New Brunswick / Repérage de la discordance entre les groupes de Horton et de Sussex dans la région de Moncton, Nouveau-Brunswick.

J.A. Walker The Flat Landing Brook Zn–Pb–Cu deposit, Bathurst Mining Camp, New Brunswick / Gîte de Zn–Pb–Cu du ruisseau Flat Landing, Camp minier de Bathurst, Nouveau-Brunswick.

P. Wilson Structural geology and tectonic history of the McCully area, southeastern New Brunswick / Géologie structurale et passé tectonique du secteur de McCully, Sud-Est du Nouveau-Brunswick.

R.A. Wilson Geology of the Ramsay Brook area (NTS 21 O/10a), Restigouche County, New Brunswick / Géologie du secteur du ruisseau Ramsay (SNRC 21 O/10a), comté de Restigouche, Nouveau-Brunswick.

R.A. Wilson Geology of the Campbellton area (NTS 21 O/15), Restigouche County, New Brunswick / Géologie du secteur de Campbellton (SNRC 21 O/15), comté de Restigouche, Nouveau-Brunswick.

X.-M. Yang, D.R. Lentz Geochemical behavior of metals during magmatic–hydrothermal evolution of intrusion-related gold systems, southwestern New Brunswick / Comportement géochimique des métaux pendant l'évolution magmatique–hydrothermale de systèmes aurifères apparentés à une intrusion, Sud-Ouest du Nouveau-Brunswick.

Workshop: Modern Methods in Exploration Geochemistry / Atelier : Méthodes modernes de géochimie d'exploration

E.C. Grunsky Some useful tools for evaluating multi-element geochemical data / Quelques outils utiles aux fins de l'évaluation des données géochimiques par rapport à plusieurs éléments.

G. Hall, S. Hamilton, B. McClenaghan, E. Cameron, B. Daneshfar Seeing through thick glacial overburden with geochemistry / Voir à travers l'épaisse couverture glaciaire grâce à la géochimie.

D. Leng Exploration geochemistry: an examination of methods and their applications / Géochimie d'exploration : examen de méthodes et de leurs applications.

D.J. Mossman Observations on the role of carbonaceous substances in ore-forming and related processes / Observations du rôle des substances carbonées dans la formation du minerai et les processus connexes.

M.A. Parkhill, J.P. Armstrong Drift prospecting methods: a review of selected Canadian case studies and the available New Brunswick database / Méthodes de prospection glacio-sédimentaire : examen d'études de cas canadiens choisies, et base de données du Nouveau-Brunswick.

T. Pronk National Geochemical Reconnaissance surveys: methodology, coverage and outcomes / Levés du programme national de reconnaissance géochimique : méthode, couverture et résultats.

D.R. Stanley Lithogeochemistry: What you discover depends on where you stand / Lithgéochimie : ce qu'on découvre dépend de l'endroit où l'on se trouve.

N.J. Susak Monitoring reliability of geochemical analyses / Surveillance de la fiabilité des analyses géochimiques.

Johnson, S.C. 2002. Revised geology of the New River Belt and proposed correlations in southern New Brunswick (abstract). Paper presented at the Colloquium and Annual General Meeting of the Atlantic Geoscience Society, Antigonish, Nova Scotia. Program and Abstracts, p. 22.

Langton, J.P., Benton, P. and van de Poll, R. 2002. MapTool: a new software program for managing field data (abstract). Paper presented at the Colloquium and Annual General Meeting of the Atlantic Geoscience Society, Antigonish, Nova Scotia. Program and Abstracts, p. 25.

Thibault J.J. 2002. New initiatives in managing peatland resources in New Brunswick, Canada. *In* Peat in Horticulture, Quality and Environmental Challenges. *Edited by* G. Schmilewski and L. Rochefort. Proceedings of the International Peat Symposium, Pärnu, Estonia. Published by the International Peat Society, pp. 222–228.

Thibault J. 2002. Gestion des tourbières au Nouveau-Brunswick. Atelier sur les milieux humides – rapport d'enquête et cahier des conférences. Ministère de l'Environnement du Québec, 10 p.

Thibault J. 2002. Tourbières du Nouveau-Brunswick : état de la ressource. Compte-rendu de l'atelier sur le statut et la conservation des tourbières du Nouveau-Brunswick, 8 mars 2002, Université de Moncton, Moncton (N.-B.), p. 5.

External Publications

BARR, S.M., WHITE, C.E., and MILLER, B.V. 2002. The Kingston terrane, southern New Brunswick, Canada: Evidence for an Early Silurian volcanic arc. The Geological Society of America, **114**: 964–982.

CARROLL, J.I. 2002. Lithogeochemistry of Ordovician sedimentary rocks associated with Ni–Co stream-silt anomalies along Ritchie Brook, Kedgwick map area, northern New Brunswick. Geological Survey of Canada, Current Research 2002-D5, 15 p.

MILLER, B.V., and FYFFE, L.R. 2002. Geochronology of the Letete and Waweig formations, Mascarene Group, southwestern New Brunswick. Atlantic Geology, **38**: 29–36.

THORNE, K.G., and LENTZ, D.R. 2001. Geochemistry and petrogenesis of the East Branch Brook metagabbroic dykes in the Sawyer Brook fault zone, Clarence Stream gold prospect, southwestern New Brunswick. Atlantic Geology, **37**: 175–190.

WHITE, C.E., BARR, S.M., MILLER, B.V., and HAMILTON, M.A. 2002. Granitoid plutons of the Brookville terrane, southern New Brunswick: petrology, age, and tectonic setting. Atlantic Geology, **38**: 53–74.

CHAPTER 2. MINERAL EXPLORATION IN NEW BRUNSWICK

METALLIC MINERALS

Claims statistics collected by the New Brunswick Department of Natural Resources and Energy (Table 1) indicates that claim-staking activity was down by approximately 5% in 2002 and the number of claims in effect at year's end was down about 7.5%. Although the number of claims in effect in northern New Brunswick was slightly more than double (8839) that in the south (4326), the reverse is true for the number of claims recorded. In the south, 1349 claims were recorded compared to 769 in the north.

For all of New Brunwick, the actual exploration expenditure for 2001 was $9 400 000 (general and mine site exploration, including overhead) and the forecast for 2002 is $3 300 000 (Natural Resources Canada survey). Most of the expenditure was focussed on the base metals in the Bathurst Mining Camp in 2001 but with the inactivity of major companies in the Camp in 2002, slightly more than half of that year's expenditure was in the Camp. Expenditures increased slightly in the southern part of the Province.

The annual informal telephone poll for northern New Brunswick, taken by the New Brunswick Department of Natural Resources and Energy in October, indicates that exploration expenditures in the northern half of the Province for 2002 are approximately $500 000, down more than $4 500 000 from 2001.

NORTHERN NEW BRUNSWICK

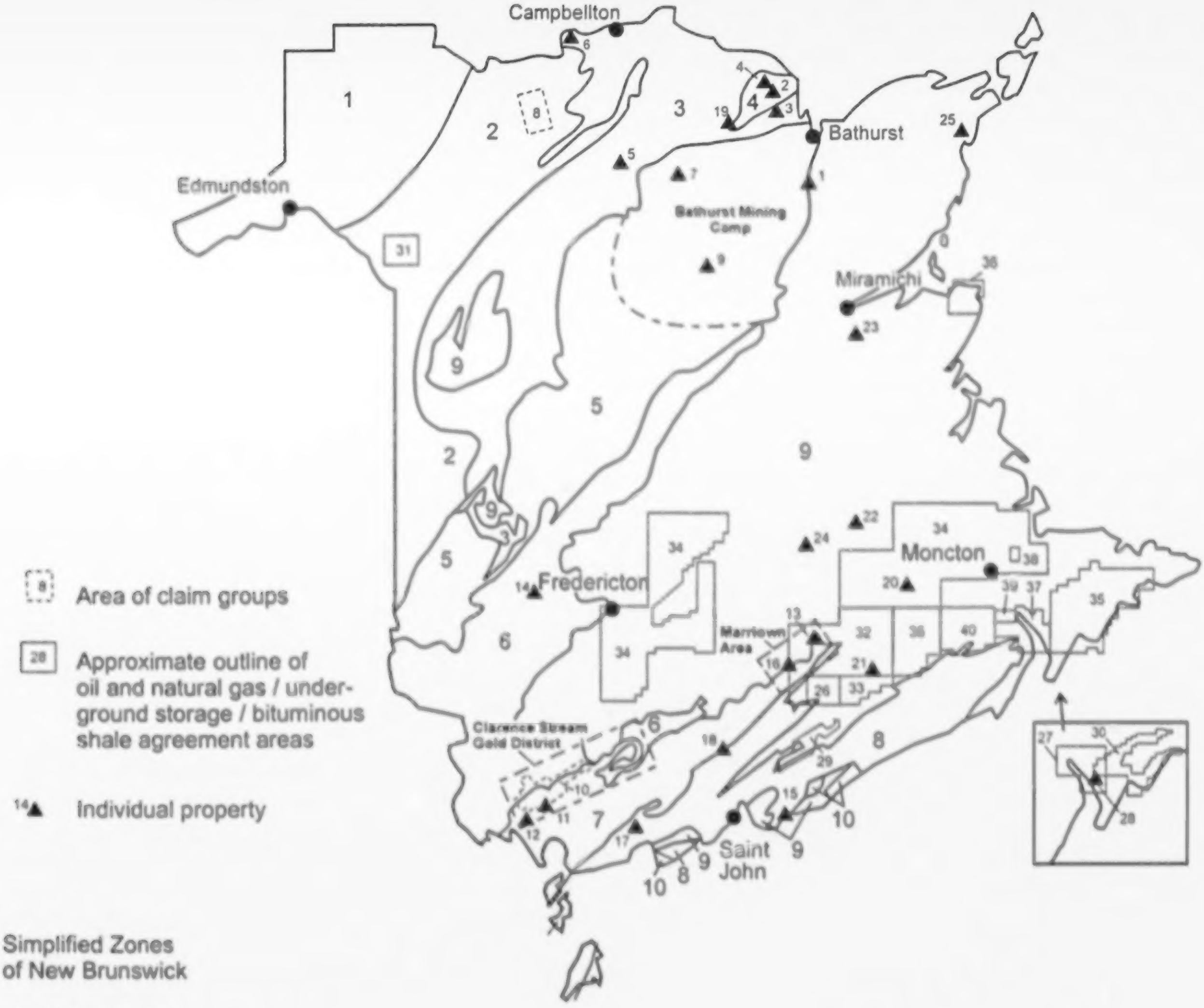
No **major companies** were active in 2002 but CanZinco Ltd., Hudson Bay Exploration and Development Co. Limited, Noranda Inc., Phelps Dodge Corporation of Canada Ltd. and Teck Exploration Ltd. still hold land positions in northern New Brunswick. CanZinco holds 171 claims compared to 341 for 2001; Hudson Bay holds 33 claims compared to 198; Noranda holds 3111 claims compared to 3777; Phelps Dodge holds 36 claims compared to 96, and Teck holds 383 claims compared to 521 for last year.

In the latter part of 2001, *Noranda Inc.* finished drilling the Key Anacon property (Figure 6: 1), which was under option from Hunter Brook Holdings Ltd. Noranda drilled 16 holes, totalling approximately 12 000 m, which represents the last exploration drilling the company did in the Bathurst Mining Camp before shutting down its Bridge Street office in Bathurst. The office was actually vacated in September, 2002, but not before turning over its digital and hardcopy exploration files to the Province under a two-year confidentiality agreement.

The active **junior companies** include Annapolis Valley Goldfields Incorporated, Aurogin Resources Ltd., Heron Mines Limited, Montoro Resources Inc., Nicon Holdings Ltd., Northeast Exploration Services Limited, Omni Mines Ltd. and PGE Resource Corporation. They collectively spent about $500 000. All but one of these companies received funding under the New Brunswick Junior Mining Assistance Program (NBJMAP). Other juniors, such as Chapleau Resources Limited, Corner Bay Silver Inc., Commander Resources Ltd. (formerly Major General Resources Limited), Eastmain Resources Inc., Freewest Resources Canada Inc., Mountain Lake Resources Inc., Royal Roads Corp. (formerly Kelmet Resources Ltd.), Stratabound Minerals Corp. and VenCan Gold Corporation held ground but did little or nowork on their claims during the year.

Legend

1. Claims, Key Anacon Mine (Hunter Brook Holdings Ltd.)
2. Claims, Nigadoo North (Nicon Holdings Limited)
3. Claims, M & M Ext. (Miramichi Minerals Ltd.)
4. Claims, Belledune area (Heron Mines Ltd.)
5. Claims, Malachite (Log House Construction Ltd.)
6. Claims, Flatlands (Flatlands Limestone Ltd.)
7. Claims, Tower (Northeast Exploration Services Limited)
8. Claims, Simpsons Gulch–Boland Brook area (A.W. Lockhart)
9. Claims, Bills Lake (PGE Resource Corporation)
10. Claims, Clarence Stream area (Freewest Resources Canada Ltd. and others)
11. Claims, Birney Lake (Union Gold Inc.)
12. Claims, Waweig area (D. Stevens and K. Reeder)
13. Claims, Sheba (Pathfinder Resources Ltd.)
14. Claims, Springfield (M. Stewart)
15. Claims, Cape Spencer area (Pro-Max Resources Inc.)
16. Claims, Annidale area (PGE Resource Corporation)
17. Claims, New River (PGE Resource Corporation)
18. Claims, McKeel Lake (Annapolis Valley Goldfields Incorporated)
19. Claims, Sormany area (Elmtree Resources Ltd.)
20. Claims, Buckley Road (Graymont (N.B.) Inc.)
21. Potash Corporation of Saskatchewan (New Brunswick Division) potash mine
22. Peat Exploration Licence (Compagnie de Tourbe Fafard ltée)
23. Peat Exploration Licence (Sun Gro Horticulture Canada Ltd.)
24. Peat Exploration Licence (Premier Horticulture ltée)
25. Peat Lease (Jiffy Products (N.B.) Ltd.)
26. Oil and natural gas licence to search (Potash Corporation of Saskatchewan Inc.)
27. Bituminous shale licence to search (Three-D GeoConsultants Limited)
28. Underground storage exploration licence (St. Clair Pipelines (1996) Ltd.)
29. Underground storage exploration licence (Corridor Resources Inc.)
30. Underground storage exploration licences (Intragas Energy, LP)
31. Oil and natural gas licence to search (Jean Mariadassou)
32. Oil and natural gas licences to search (Corridor Resources Inc.)
33. Oil and natural gas licence to search (Corridor Resources Inc. and Potash Corporation of Saskatchewan Inc.)
34. Oil and natural gas licences to search (Columbia Natural Resources Canada, Ltd.)
35. Oil and natural gas licences to search (Corridor Resources Inc. and Columbia Natural Resources Canada, Ltd.)
36. Oil and natural gas licence to search (Norton Energy Inc.)
37 Oil and natural gas licence to search and leases (J.A. Seglund Inc.)
38. Oil and natural gas lease (RHT Enterprises Ltd.)
39. Oil and natural gas lease (Irving Oil Limited)
40. Oil and natural gas lease (Columbia Natural Resources Canada, Ltd.)


Campbellton
Edmundston
Bathurst
Bathurst Mining Camp
Miramichi
Fredericton
Moncton
Marrtown Area
Clarence Stream Gold District
Saint John
Area of claim groups
Approximate outline of oil and natural gas / underground storage / bituminous shale agreement areas
Individual property

Simplified Zones
of New Brunswick

1. Edmundston
2. Kedgwick
3. Tobique-Chaleur
4. Elmtree
5. Miramichi
6. Fredericton
7. Passamaquoddy
8. Saint John
9. Maritimes Basin
10. Fundy Basin

Figure 6. Highlighted exploration properties in New Brunswick, 2002.

Annapolis Valley Goldfields Incorporated optioned properties (Figure 6: 2–3) from Nicon Holdings Ltd. and Miramichi Minerals Ltd. Two holes were drilled on the former option to look for northern extensions of the high-silver Nigadoo lode, but without success. On the latter option, one or two holes will be drilled next year to test IP anomalies up-ice from known boulders that grade as high as 14% Pb + Zn and 14 oz./ton (480 g/t) Ag.

Heron Mines Ltd. and joint-venture partner *Aurogin Resources Ltd.* accounted for more than half of the exploration expenditures in northern New Brunswick. They worked their 370-claim property (Figure 6: 4) in the Belledune Inlier, specifically east of the Devonian Antinouri Lake Granite to evaluate the precious metal potential of its contact aureole, after finding a new auriferous zone at Guitard Brook in 2001. More than a dozen holes were drilled to test airborne (Aeroquest) geophysical anomalies from the survey that was flown in 2001. No results have been released to date.

Montoro Resources Inc. conducted a mapping and trenching program on its 37-claim cobalt property (Figure 6: 5), under option from *Log House Construction Ltd.* Assay results from grab samples, which were reported in 2001 and graded up to 2496 ppm Co, 495 ppm Cu and 5386 ppm As, attracted the company's attention to this property. The trenching showed that the host rocks are part of an intensely altered rhyolite flow that probably constitutes the base of the Lower Devonian Tobique Group.

Nicon Holdings Ltd. drilled 10 holes, totalling 356 m, on the 23-claim Flatlands property (Figure 6: 6) to delineate the extent of a limestone body that was discovered in 2001 by Reginald Wilson during routine bedrock mapping. Seven of the holes cut limestone, with the thickest intersection being 18 m. Assay results have not been reported.

Northeast Exploration Services Ltd. drilled two holes on its 22-claim Tower property (Figure 6: 7) to test a base-metal target along strike from the known zone that was drilled by Connecticut Development Corporation several years ago. A well-developed footwall-type alteration zone was encountered but no significant sulphides were intersected.

Omni Mines Ltd. (W. Lockhart and associates) carried out additional work on its 654-claim property in the Simpsons Gulch–Boland Brook area (Figure 6: 8) in an attempt to source the nickel–cobalt stream-sediment anomalies that are common there. A single deep hole (about 1000 m) was drilled in 2001 to determine if there is a blind mafic intrusion in this area that could account for these anomalies and the coincident regional magnetic anomaly. However, the drilling did not show any increase in metamorphic grade with depth so the conundrum remains.

PGE Resource Corporation drilled one deep hole (over 1000 m) on its 98-claim Bills Lake property (Figure 6: 9) to test a base-metal target. No results have been reported.

SOUTHERN NEW BRUNSWICK

Gold was the main focus of metallic mineral exploration activities in southern New Brunswick for the 2002 calendar year, especially in the Clarence Stream and Marrtown areas (Figure 6) east of St. Stephen and north of Sussex, respectively. Currently, several junior mining companies, local exploration companies and prospectors hold about 3000 claims in the Clarence Stream area and about 1000 claims in the Marrtown area. These companies and prospectors have spent in excess of $2 000 000 in these areas and on other claim groups elsewhere in the region in order to expand reserves around known gold deposits and search for new occurrences. Work during 2002 has confirmed that gold is widespread and occurs in a variety of settings throughout the region, signifying the emergence of a new gold district.

Gold Exploration in the Clarence Stream area: *Freewest Resources Canada Inc.* led the exploration effort in the Clarence Stream area (Figure 6: 10) again this year, where it has been established that intrusion-related gold occurrences abound. Of major significance is the company's discovery of high-grade mineralization around "Anomaly A" that occurs a considerable distance (more than 3 km) northwest of initial discoveries in the vicinity of its Main Zone. The new mineralized zones occur in shallowly dipping, brittle fault structures in Ordovician strata in contrast to those in the Main Zone that are restricted to moderately to steeply dipping ductile–brittle deformation zones in Silurian volcanosedimentary sequences and mafic intrusions along the contact of Devonian felsic intrusions of the Saint George Batholith. To date, more than 150 holes have been drilled on Freewest's properties. The most recent drilling continued to intersect spectacular, potentially economic, high-grade ore zones within "Anomaly A." The company has also dramatically expanded the potential for these mineralized zones in the Ordovician strata over several kilometres by conducting extensive trenching programs in the vicinity of previously recognized occurrences along strike to the west. As a result of its work over the past few years, Freewest Resources Canada Inc. has commissioned a preliminary scoping study of the property. This is being initiated to assist in exploration efforts and to conduct a variety of projects (e.g., preliminary metallurgical work, economic analysis, etc.) aimed at future development of this gold resource.

Other junior mining companies involved in exploration in this area include Union Gold Inc., Fancamp Resources Ltd., Golden Hope Mines Limited, Murgor Resources Inc. and PGE Resource Corporation. Some of these companies conducted grassroots exploration activities on their properties with promising results. *Union Gold Inc.* drilled 5 holes following up on geophysical and geochemical surveys, and the discovery of high-grade auriferous boulders on the property (Figure 6: 11). Although no high-grade mineralization was intersected in the company's drilling program, they were successful in intersecting anomalous gold values within the mineralized structures directly along strike of those that host Freewest Resources Canada Inc.'s Main Zone deposit.

A group of local prospectors also continued to be very active in the area during 2002, including William Gardiner (Southfield Resources Ltd.), Emilio Doiron (Pro-Max Resources Inc.), Perry English, Raymond Thorn, David O'Neil, David Stevens, Peter Fenety, Kim Reeder and Karen MacKay. These explorationists conducted extensive grassroots exploration programs and demonstrated that potentially economic mineralized zones exist throughout this region of southwestern New Brunswick. Of particular note, *David Stevens* and *Kim Reeder* discovered additional high-grade gold mineralization at Waweig (Figure 6: 12), which appears to be associated with the same structural zone that hosts Freewest Resources Canada Inc.'s Main Zone, about 20 km along strike to the northeast.

Gold Exploration in the Marrtown area: In the latter part of 2002, *Emilio Doiron's* discovery of high-grade gold associated with steep fault zones within Ordovician mafic volcanic and intrusive rocks of the Ordovician Annidale Group resulted in intensive exploration north of Sussex (Figure 6). Junior mining companies, including Pathfinder Resources Ltd. and Serengeti Resources Inc., and several local exploration companies and prospectors including William Gardiner (Southfield Resources Ltd.), William Carter, Kevin Veysey, Charles Lowther and Cyril Beaman now hold nearly 1000 claims around and to the southwest of Marrtown. *Pathfinder Resources Ltd.*, who until recently held most of these claims, followed up on geophysical and geochemical programs by conducted a 14-hole drilling program (Figure 6: 13). Lower grades than expected were intersected at depth beneath the surface discovery zone. Several new mineral occurrences and indications of additional high-grade gold zones found on these properties may rejuvenate gold exploration throughout the Annidale Belt.

Gold exploration in other areas: Elsewhere in southern New Brunswick, intrusion-related gold systems are also being investigated. Of particular interest is the Springfield property (Figure 6: 14) held by *Merton Stewart* and located northwest of Fredericton. Mineralization on the property occurs in Silurian strata adjacent to Devonian felsic intrusions of the Pokiok Batholith in a similar setting to that at Clarence Stream. *TNR Resources Ltd.* drilled three holes on the property and were successful in extending the known strike length and depth of the auriferous altered zone but failed to intersect high-grade gold mineralization like that found previously on surface. However, they at depth and delineating a more extensive alteration zone than anticipated along strike. However, additional drilling is planned on the property in the near future.

In the Cape Spencer area south of Saint John (Figure 6: 15), additional grassroots exploration and a trenching program was conducted to further extend gold resources associated with the Hercynian fold–thrust belt in that area. *Emilio Doiron* (Pro-Max Resources Inc.), working in conjunction with *Raymond Thorn* and *Mark McNamara*, have discovered discrete and previously unrecognized, high-grade and potentially extensive gold-bearing zones on their advanced stage properties. Numerous drill-ready targets have been identified.

Exploration for other Commodities: *PGE Resource Corporation* continued exploration for massive sulphides in Ordovician and Silurian volcanosedimentary sequences in the Annidale and New River areas (Figure 6: 16–17) located northeast and west of Saint John, respectively. In addition to grassroots exploration in both areas, some drilling was conducted at New River with results pending.

Annapolis Valley Goldfields Incorporated drilled two holes on its McKeel Lake rare-earth-element property (Figure 6: 18) where mineralization was known to be associated with aplite dykes intruding alkali feldspar granite at surface. These dykes and others were intersected but grades were less than expected. However, potentially mineralized areas were delineated to the east of the drilled showing during reconnaissance mapping.

TECHNICAL PROGRESS REPORTS

No Technical Progress Reports were received in 2002.

MINERAL EXPLORATION REPORTS OF WORK

During 2002, 99 reports of work were received by the Recorder in accordance with the *Mining Act*, Chapter M-14.1, S.N.B. 1985. These reports are summarized in tabular form on the following pages and their locations are shown on Figure 7. The name of the company or individual listed for each report of work is that of the holder of the mineral rights. Reports are arranged in the following order: (1) by the geological belt in which the claims are located, (2) alphabetically by company or individual, and (3) alphabetically by property name.

Claim Group	Geoscan No.	NTS	Release Date
ZONE 2. KEDGWICK			
12. Fahey, Joseph			
St. Leonard	475573	21O/04W	Available
32. Ouellet, Denis			
a. Chisholm Brook	475559	21 O/11E	July 18, 2004
b. Chisholm Brook	475560	21 O/11E	July 18, 2004
c. Chisholm Brook	475561	21 O/11E	July 18, 2004
d. Chisholm Brook	475562	21 O/11E	July 18, 2004
e. Chisholm Brook	475563	21 O/11E	July 18, 2004

Claim Group	Geoscan No.	NTS	Release Date
f. Chisholm Brook	475564	21 O/11E	July 18, 2004
g. Chisholm Brook	475565	21 O/11E	July 18, 2004
h. Chisholm Brook	475566	21 O/11E	July 18, 2004
ZONE 3. TOBIQUE–CHALEUR			
5. CanZinco Ltd.			
Restigouche Project	475570	21 O/10E	Aug. 09, 2004
6. Carroll, Wayne			
a. Campbell	475510	21 O/02W	Jan. 25, 2004
10. Elmtree Resources Ltd.			
Millstream	475551	21 P/12W	July 05, 2004
15. Flatlands Limestone Ltd.			
Flatlands	475603	21 O/15W	Dec. 20, 2004
18. Geraghty, Dan			
Tyan	475500	21 O/15E	Jan. 03, 2004
19. Godin, Clovis			
Mitchell Settlement	475595	21 P/13W	Dec. 10, 2004
24. Log House Construction Ltd.			
a. Big Pit	475495	21 O/10E	Jan. 02, 2004
b. Fossil Hill	475497	21 O/09W	Jan. 02, 2004
c. Gold	475498	21 O/09E	Jan. 02, 2004
d. Malachite	475494	21 O/10E	Jan. 02, 2004
e. Malachite	475585	21 O/07E, 10E	Nov. 07, 2004
f. Moose Brook	475582	21 O/07W	Nov. 01, 2004
26. Nicon Holdings Ltd.			
a. Free Grant	475604	21 P/13W	Dec. 23, 2004
27. Noel, Lorenzo			
a. Cluster Grid	475546	21 O/09W	June 17, 2004
b. Noel Grid	475538	21 O/09E	Apr. 10, 2004
30. Northeast Exploration Services Limited			
Ransom Brook / Mount Boardman	475581	21 O/07E	Oct. 31, 2004
40. Slam Exploration Ltd.			
a. Costigan	475578	21 J/14E	Oct. 22, 2004
43. Stewart, Ralph			
Beresford Copper	475532	21 P/12W	Mar. 17, 2004
ZONE 4. ELMTREE			
26. Nicon Holdings Ltd.			
b. Nigadoo North	475605	21 P/13W	Dec. 23, 2004
39. Sekots Enterprises Inc.			
Sekots	475569	21 P/13W	Aug. 08, 2004

Claim Group	Geoscan No.	NTS	Release Date
ZONE 5. MIRAMICHI			
2. Bathurst Exploration Ltd.			
Camel Back Ext.	475598	21 O/09E	Dec. 12, 2004
3. Black, Don			
Camel Back	475511	21 O/09W	Feb. 01, 2004
6. Carroll, Wayne			
b. Big South	475508	21 O/02W	Jan. 25,2004
c. WWK	475509	21 O/07E	Jan. 25, 2004
7. Connell, Mark			
a. Dead Creek	475601	21 G/13E	Dec. 17, 2004
b. Dead Brook	475515	21 G/13E	Feb. 11, 2004
9. Duncan, John			
Smith Showing	475579	21 O/09E	Oct. 28, 2004
16. Forest Gate Resources Inc.			
a. California Lake	475588	21 O/08E	Dec. 05, 2004
b. Canoe Landing Lake	475580	21 O/08E	Oct. 31, 2004
c. Rio Road	475596	21 O/08E	Dec. 11, 2004
20. Graham, Ian			
a. Headway	475567	21 P/05W	July 29, 2004
b. Headway	475597	21 P/05W	Aug. 14, 2004

Figure 7
Reports of Work

1. Annapolis Valley Goldfields Incorporated
2. Bathurst Exploration Ltd.
3. Black, Don
4. Canoga Resources Ltd.
5. CanZinco Ltd.
6. Carroll, Wayne
7. Connell, Mark
8. Cox, Reg
9. Duncan, John
10. Elmtree Resources Ltd.
11. English, Perry
12. Fahey, Joseph
13. Fancamp Resources Ltd.
14. Fenety, Peter
15. Flatlands Limestone Ltd.
16. Forest Gate Resources Inc.
17. Freewest Resources Canada Inc.
18. Geraghty, Dan
19. Godin, Clovis
20. Graham, Ian
21. Hunter Brook Holdings Ltd.
22. Johnston, Anthony
23. Lafarge Canada Inc.
24. Log House Construction Ltd.
25. Murgor Resources Inc.
26. Nicon Holdings Ltd.
27. Noel, Lorenzo
28. Noranda Inc.
29. Noranda Mining and Exploration Inc.
30. Northeast Exploration Services Limited
31. O'Neil, David
32. Ouellet, Denis
33. Pathfinder Resources Inc.
34. Paulin, Gaston
35. PGE Resource Corporation
36. Pro-Max Resources Inc.
37. Ross, Frank
38. Ross, Frank and Robert Donovan
39. Sekots Enterprises Inc.
40. Slam Exploration Ltd.
41. Stevens, Dave
42. Stewart, Merton
43. Stewart, Ralph
44. Taylor, Bruce
45, Thorn, Raymond
46. Union Gold Inc.
47. Whaley, Ken

Simplified Zones
of New Brunswick

1. Edmundston
2. Kedgwick
3. Tobique–Chaleur
4. Elmtree
5. Miramichi
6. Fredericton
7. Passamaquoddy
8. Saint John
9. Maritimes Basin
10. Fundy Basin

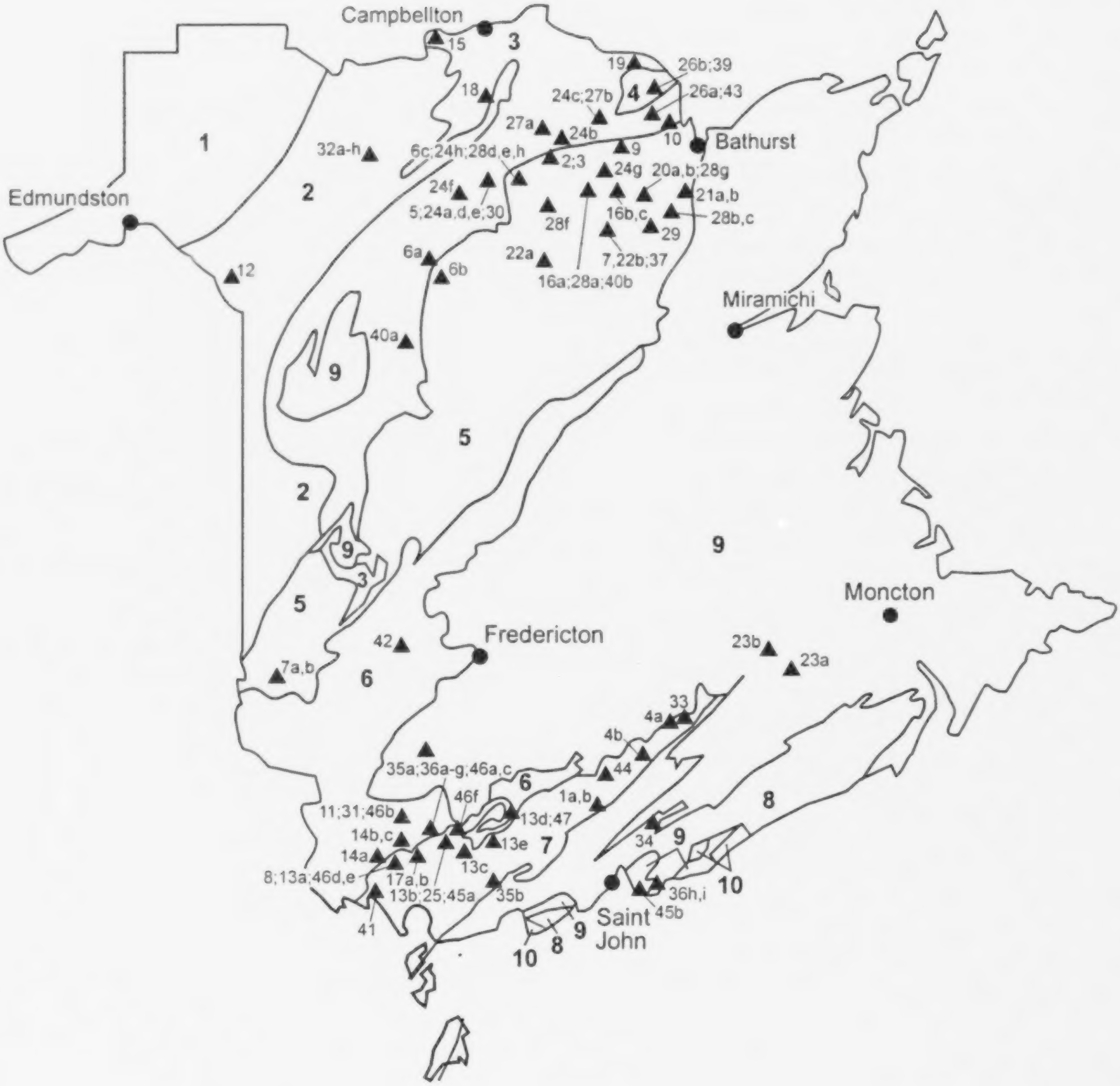

Campbellton
15
3
18
19
26b;39
4
26a;43
24c;27b
27a
24b
10
Bathurst
1
32a-h
6c;24h;28d,e,h
9
2;3
24g
20a,b;28g
24f
21a,b
Edmundston
2
5;24a,d,e;30
28f
16b,c
28b,c
29
6a
22a
7,22b;37
6b
16a;28a;40b
12
Miramichi
40a
9
5
2
9
9
3
Moncton
5
Fredericton
42
23b
23a
7a,b
6
33
4a
4b
35a;36a-g;46a,c
44
6
1a,b
8
11;31;46b
46f
13d;47
14b,c
34
9
13e
7
14a
8;13a;46d,e
17a,b
13c
10
13b;25;45a
35b
36h,i
41
45b
Saint
John
9
10
8

Figure 7. Location of properties for which mineral exploration reports of work were filed in 2002.

Claim Group	Geoscan No.	NTS	Release Date
21. Hunter Brook Holdings Ltd.			
a. Key Anacon Mine	475571	21 P/05E	Aug. 12, 2004
b. Key Anacon Mine	475572	21 P/05E	Aug. 12, 2004
22. Johnston, Anthony			
a. Moose Brook	475594	21 O/01W	Dec. 10, 2004
b. Stratmat	475593	21 O/08E	Dec. 03, 2004
24. Log House Construction Ltd.			
g. South Branch Middle River	475583	21 O/09E	Nov. 01, 2004
h. Upsalquitch	475496	21 O/07E	Jan. 02, 2004
28. Noranda Inc.			
a. Indian Lake	475525	21 O/08E	Mar. 06, 2004
b. Beehler / East Beehler Ext.	475543	21 P/05E	May 13, 2004
c. Brunswick	475526	21 P/05W	Mar. 06, 2004
d. Mount Fowler	475531	21 O/09W	Mar. 06, 2004
e. Mount Perley	475528	21 O/08W	Mar. 06, 2004
f. Mt. Fronsac/ Fly Tent Brook	475527	21 O/08W	Mar. 06, 2004
g. Pabineau South	475529	21 P/05W	Mar. 06, 2004
h. Southwest Upsalquitch	475530	21 O/09W	Mar. 06, 2004
29. Noranda Mining and Exploration Inc.			
Narrows	475506	21 P/05W	Jan. 17, 2004
37. Ross, Frank			
Wedge South	475599	21 O/08E	Dec. 13, 2004
38. Ross, Frank and Robert Donovan			
Lazares Brook	475514	21 O/08E	Feb. 08, 2004
40. Slam Exploration Ltd.			
b. O'Hearn	475501	21 O/08E	Jan. 08, 2004
ZONE 6. FREDERICTON			
11. English, Perry			
Flume	475576	21 G/06E	Oct. 10, 2004
14. Fenety, Peter			
a. Central Tower Hill	475502	21 G/06E	Jan. 09, 2004
b. Wilson Hill	475535	21 G/06E	Apr. 02, 2004
c. Wilson Hill	475586	21 G/06E	Nov. 19, 2004
31. O'Neil, David			
North Pine Valley	475584	21 G/06E	Nov. 01, 2004
35. PGE Resource Corporation			
a. True Hill	475575	21 G/07W	Sept. 13, 2004
36. Pro-Max Resources Inc.			
a. Kedron Stream	475549	21 G/07W	June 27, 2004
b. Piskahegan East	475547	21 G/07W	June 27, 2004
c. Piskahegan West	475550	21 G/07W	June 27, 2004
d. Piskahegan West	475503	21 G/07W	Jan. 09, 2004
e. Pleasant Ridge	475548	21 G/07W	June 27, 2004
f. Pleasant Ridge	475577	21 G/07W	Oct. 22, 2004
g. Pleasant Ridge	475537	21 G/07W	Apr. 15, 2004

Claim Group	Geoscan No.	NTS	Release Date
42. Stewart, Merton			
Springfield	475592	21 J/03E	Dec. 02, 2004
46. Union Gold Inc.			
a. Beech Hill	475517	21 G/07W	Feb. 25, 2004
b. Pine Valley	475589	21 G/06W	Dec. 09, 2004
c. True Hill	475516	21 G/07W	Feb. 25, 2004
47. Whaley, Ken			
Sand Brook	475513	21 G/07E	Feb. 07,2004
ZONE 7. PASSAMAQUODDY			
1. Annapolis Valley Goldfields Incorporated			
a. McKeel Lake	475507	21 G/08E	Jan. 23, 2004
b. McKeel Lake	475539	21 G/08E	Apr. 08, 2004
4. Canoga Resources Ltd.			
a. East Scotch Settlement	475512	21 H/13W	Feb. 05, 2002
b. Sleeping Beauty	475504	21 H/12W	Jan. 11, 2004
8. Cox, Reg			
Lower Tower Hill	475557	21 G/06E	July 19, 2004
13. Fancamp Resources Ltd.			
a. Hewitt	475556	21 G/06E	July 17, 2004
b. Little Long Lake	475542	21 G/07E	Apr. 18, 2004
c. McDougall Inlet / Cundy Lake / Nason Brook	475541	21 G/07E	Apr. 18, 2004
d. Sand Brook	475540	21 G/07E	Apr. 18, 2004
e. South Oromocto Lake	475544	21 G/07E	May 23, 2004
17. Freewest Resources Canada Inc.			
a. Clarence Stream	475558	21 G/07W	July 19, 2004
b. Clarence Stream	475587	21 G/07W	Nov. 26, 2004
25. Murgor Resources Inc.			
Pomeroy	475602	21 G/07W	Dec. 19, 2004
33. Pathfinder Resources Inc.			
Sheba	475600	21 H/13W	Dec 16, 2004
35. PGE Resource Corporation			
b. New River	475534	21 G/02W	Mar. 06, 2004
41. Stevens, Dave			
Waweig	475523	21 G/03E	Mar. 04, 2004
44. Taylor, Bruce			
Evandale	475522	21 G/09E	Mar. 04, 2004
45. Thorn, Raymond			
a. Beech Hill	475499	21 G/07W	Jan. 02, 2004
46. Union Gold Inc.			
d. Birney Lake	475536	21 G/06E	Apr. 10, 2004
e. Birney Lake	475590	21 G/06E	Dec. 09, 2004
f. McDougall Inlet	475591	21 G/07W	Dec. 09, 2004

Claim Group	Geoscan No.	NTS	Release Date
ZONE 8. SAINT JOHN			
34. Paulin, Gaston			
French Village	475574	21 H/05W	Sept. 03, 2004
36. Pro-Max Resources Inc.			
h. Armstrong Brook	475552	21 H/04W	July 05, 2004
i. Armstrong Brook	475555	21 H/04W	July 17, 2004
ZONE 9. MARITIMES BASIN			
23. Lafarge Canada Inc.			
a. Glenvale Gypsum	475554	21 H/14E	July 12, 2004
b. Springhill	475553	21 I/03W	July 12, 2004
45. Thorn, Raymond			
b. Cape Spencer	475524	21 H/04W	Mar. 04, 2004

INDUSTRIAL MINERALS

Exploration and development activity related to New Brunswick's industrial rock and mineral resources continued at a respectable pace throughout 2002, primarily focused on limestone, dolomite and potash resources with activities reported in northern and southeastern New Brunswick. In the northern part of the province, Elmtree Resources Ltd. continued to evaluate a dolomite deposit located a few kilometres east of its limestone operation at Sormany (Figure 6: 19) about 30–40 km west of Bathurst. Elsewhere in northern New Brunswick, another limestone property near Flatlands (Figure 6: 6)underwent some mapping, sampling and a follow-up drilling program by Nicon Holdings Ltd. In the southeast Graymont (NB) Inc. renewed exploration activity on its Buckley Road limestone claims (Figure 6: 20) several kilometres north of its Havelock Processing facility. Interest has also been shown in limestone and dolomite resources in the vicinity of Saint John sparked in part by NB Power's refurbishment of the Coleson Cove Electric Power Generating Station.

Near Sussex, the Potash Corporation of Saskatchewan (NB Division) reported that a five-hole drilling project was successful in intersecting a significant potash resource adjacent to and southeast of its Plumweseep mine/mill facility (Figure 6: 21).

PEAT

Eight new applications for peat exploration licences on Crown lands were received in 2002: Peatland 25 by Le Groupe Qualité Lamèque ltée; Peatlands 564 and 566 by Réginald Boudreau; Peatland 4 by Sun Gro Horticulture Canada Ltd.; Peatland 153 by Premier Horticulture ltée; Peatlands 340, 342 and 342A by Donald Doucet.

Two new Peat Exploration Licences were issued in 2002: Licence 2002-2 for Peatland 4 to Sun Gro Horticulture Canada Ltd.; Licence 2002-3 forPeatland 153 to Premier Horticulture ltée.

Fifteen applications for Peat Exploration Licences were rejected or abandoned: Peatland 575 by Jeanne-Mance Larocque; Peatlands 343 and 590 by Adrien Chiasson; Peatlands 340, 341 and

342A by Donald Doucet; Peatland 574 by La Mousse Acadienne (1979) ltée; Peatland 548 by Marc Gauvin; Peatlands 544, 547 and 553 by Sun Gro Horticulture Canada Ltd.; Peatlands 10 and 305 by Envirem Technologies Inc.; Peatland 684A by McMinn Pit Ltd.; Peatland 564 by Réginald Boudreau.

Eighteen applications for Peatland Options were rejected: Peatland 56 by Premier Horticulture ltée; Peatlands 60, 61, 343, 494, 544, 547, 551, 553 and 554 by La Mousse Acadienne (1979) ltée; Peatland 305 by Malpec Peat Moss Ltd.; Peatlands 304A, 305, 337A and 339 by Le Groupe Berger ltée; Peatlands 373, 376 and 383 by Le Groupe Qualité-Lamèque ltée.

Compagnie de Tourbe Fafard ltée

COMPANY Compagnie de Tourbe Fafard ltée, 422, chemin Pallot, Inkerman, New Brunswick E8P 1B5. Telephone: (506) 336-9715. The Manager is Denis Mallet.

RIGHTS Peat Exploration Licence 2001-3 (272 ha) on Peatland 39, under the *Quarriable Substances Act,* Chapter Q-1.1, S.N.B. 1991.

LOCATION Peatland 39 is located 5 km west of the company's current operation at Birch Ridge, northwest of Moncton, in Kent County. (Figure 6: 22).

HISTORY Compagnie de Tourbe Fafard ltée held an option on Peatland 39 since 1996. The company applied for a peat exploration licence in October 2001 that was issued in November of the same year.

RESERVES AND GRADE 4.85 Mm³ surficial peat; average depth 2.6 m; average humification 3.0 von Post.

Sun Gro Horticulture Canada Ltd.

COMPANY Sun Gro Horticulture Canada Ltd., 124, chemin de la Tourbe, Maisonnette, New Brunswick E8N 1P8. Telephone: (506) 727-3428. The Manager is Reynald Boudreau.

RIGHTS Peat Exploration Licence 2002-2 (528 ha) on Peatland 4, under the *Quarriable Substances Act,* Chapter Q-1.1, S.N.B. 1991.

LOCATION Peatland 4 is located 13 km south of Miramichi, in Northumberland County. (Figure 6: 23).

HISTORY Sun Gro Horticulture Canada Ltd. held option OP-98-1 on Peatland 4 since 1998. The company applied for a peat exploration licence in September 2002 that was issued in October of the same year.

RESERVES AND GRADE 7.96 Mm³ surficial peat; average depth 2.1 m; average humification 2.9 von Post.

Premier Horticulture ltée

COMPANY Premier Horticulture ltée, 1, avenue Premier, C.P. 2600, Rivière-du-Loup (Québec). Telephone: (418) 862-6356. The contact person is Michel Vachon, Director of Operations.

RIGHTS Peat Exploration Licence 2002-3 (213 ha) on Peatland 153, under the *Quarriable Substances Act*, Chapter Q-1.1, S.N.B. 1991.

LOCATION Peatland 153 is located 20 km north of Canaan Forks, Queens County. Access is by logging roads (Figure 6: 24).

HISTORY Premier Horticulture ltée, a subsidiary company of Premier Tech ltée, had been issued option OP-99-6 in 1999. It applied for a peat exploration licence in September 2002 that was issued in December of the same year.

RESERVES AND GRADE An estimated 2.24 Mm^3 surficial peat; average depth 2.0 m; average humification 3.4 von Post.

Jiffy Products (N.B.) Ltd.

COMPANY Jiffy Products (N.B.) Ltd., C.P. 2004, Parc industriel, Shippagan, N.B. E8S 3H1. The Manager is Alonzo Dupuis. Telephone: (506) 336-2284.

RIGHT Peat Lease No. 32 (268 ha) on Peatland 536 under the *Quarriable Substances Act*, Chapter Q-1.1, S.N.B. 1991.

LOCATION Peatland 536 is located 8 km north of Tracadie-Sheila, between Pont-Landry and Ste-Rose, Gloucester County (Figure 6: 25).

HISTORY Jiffy Products (N.B.) Ltd., a subsidiary of Jiffy Products International, Oslo, Norway, established a peat pot and pellet manufacturing plant in Shippagan in 1975. In 1982, the company was issued a Peat Exploration Licence for Peatland 536. A Peat Lease was granted in 1989 to guarantee a long-term supply of quality peat moss for the manufacturing plant.

RESERVES AND GRADE 5.64 Mm^3 surficial peat; average depth 2.6 m; average humification 3.4 von Post.

DEVELOPMENT No new development. Peatland 536 is considered a reserve for future needs.

HYDROCARBONS AND UNDERGROUND STORAGE

Oil and natural gas, underground storage and bituminous shale agreement areas are shown in Figure 1 (26–40).

The McCully natural gas discovery near Sussex sparked drilling and seismic activity during 2002. A farmin by *EOG Resources Canada Inc.* saw three wells drilled near the McCully field (Figure 6: 32), while *Corridor Resources Inc.* initiated two reflective seismic programs to acquire some 120 km of seismic near McCully (Figure 6: 32) and Elgin (Figure 6: 35) . The Board of Commissioners of Public Utilities awarded a local gas producer's franchise to Potash Corporation of Saskatchewan Inc. and Corridor Resources Inc., along with permits to construct a pipeline and a gas processing plant. The companies have slated March 2003 as a target date for natural gas production from McCully 1 and 2 wells (Figure 6: 32). This represents the first indigenous natural gas production since suspension of production at the Stoney Creek field in 1991.

Columbia Natural Resources Canada Limited continued with oil production testing from two wells in the Hillsborough area (Figure 6: 37); however, the company reduced exploration activity mid-year as a result of a corporate decision.

The increase in petroleum exploration activity in the Province caused the New Brunswick Department of Natural Resources and Energy to undertake a two-phase review of its 1976 legislation. The outcome of the initial phase was proclaimed October 2001 in an *Act to Amend the Oil and Natural Gas Act*, and included amendments to the Survey System Regulation and Licence to Search and Lease Regulation. The second phase of the legislative review is underway and includes the development of a new drilling and production regulation, structuring of a royalty regulation and amendments to the geophysical exploration regulation.

CHAPTER 3. MINES AND QUARRIES

PRODUCTION STATISTICS

The 2002 value of mineral production (including coal) in New Brunswick is estimated to be $652 284 987, representing a decrease of 19% from the final value of $807 202 968 in 2001 (Table 4; Figure 8). The decrease was due to a fall in production of zinc, as well as a marked reduction in the zinc price. The value of the Canadian dollar remained almost unchanged at US 64.03¢, down 1% from the previous year, when it averaged US 64.58¢.

The value of metals production during the year was $440 923 232, representing 68% of the Province's value of mineral production. Overall, the sector was down by 24%. Noranda's Brunswick mine, the Province's sole metals producer, experienced lower ore production than in 2001. CanZinco's Caribou mine remained shut down for the fourth full year after low metal prices and metallurgical difficulties had forced a suspension of operations in August 1998. Despite a weaker performance than in the previous year, zinc continued to dominate the metals sector, with a value of $313 683 092, representing 71% of the total value of metals. The value of zinc production decreased by approximately 29% from 2001. The zinc price fell by 12% between 2001 (40.2¢/lb. [U.S.]) and 2002 (35.3¢/lb. [U.S]). The slight drop in the average exchange rate of the Canadian dollar was not a significant contributor to the value of production as expressed in Canadian currency. Lead also was a factor in the drop in metals value, as production fell by 11%, while the price decreased by almost 5% (20.5¢/lb. [U.S.], down from 21.6¢/lb. [U.S.] in 2001). The value of copper production was almost unchanged at $22 115 646, as the price decreased by just over 1% (70.7¢/lb. in 2002 vs 71.6¢/lb. in 2001) and production decreased by less than 1%. Antimony, bismuth, and cadmium continued to be produced as by-products from the Brunswick operation. The total value of the three by-product metals decreased by 32%, mainly because of a substantial decline in bismuth production. Despite a 6% decline in the quantity of gold produced, the value actually increased by 8%, as a result of a 14% increase in the price. A 5% increase in the silver price was not enough to offset an 11% decrease in production, as the value of silver fell by 6%.

Table 4. Value of Mineral Production* in New Brunswick, 1990 to 2002
(Source: Natural Resources Canada)

Calendar Year	Metals ($)	Nonmetals ($)	Fuels ($)	Structural Materials ($)	Total ($)
1990	584 491 926	208 784 840	37 200 000	47 449 277	877 926 043
1991	375 427 470	220 185 000	34 185 000	41 663 590	671 475 483
1992	594 174 162	243 745 074	32 200 000	38 001 869	908 121 105
1993	489 912 908	208 094 381	33 800 000	40 042 060	771 849 349
1994	543 445 558	252 225 522	28 450 000	37 923 292	862 044 372
1995	670 694 700	281 088 407	24 410 000	44 459 331	1 020 652 438
1996	586 293 968	301 627 615	24 030 000	42 731 027	954 682 610
1997	657 532 566	238 936 898	18 190 000	38 411 671	953 071 135
1998	609 944 183	188 890 558	22 850 000	41 307 613	862 992 354
1999	595 437 842	185 020 794	20 870 000	47 207 878	848 536 514
2000	520 549 200	189 360 937	22 843 000	39 793 338	772 546 475
2001	580 228 349	168 088 432	19 923 400	38 962 787	807 202 968
2002(P)	440 923 232	151 893 181	22 088 000	37 380 574	652 284 987

(P) Preliminary figures; * Current dollars

Table 5. Mineral Production in New Brunswick, 2001 (F) and 2002 (P)
(Source: Natural Resources Canada)

Commodity	Unit	2001 Final		2002 Preliminary	
		Quantity	Value ($)	Quantity	Value ($)
Metals					
Antimony	kg	*	*	*	*
Bismuth	kg	251 530	3 102 119	189 333	1 905 258
Cadmium	kg	191 967	145 895	128 000	113 536
Copper	kg	9 047 821	22 610 505	8 993 756	22 115 646
Gold	g	*	*	*	*
Lead	kg	82 368 384	59 964 184	73 250 213	52 300 652
Silver	kg	224 956	49 435 490	199 156	46 589 161
Zinc	kg	313 088 879	441 142 231	256 696 475	313 683 092
TOTAL			580 228 349		440 923 232
Nonmetals					
Marl	t	*	*	*	*
Peat	t	488 619	53 765 688	411 575	45 020 608
Potash	t	*	*	*	*
Quartz (silica)	t	*	*	*	*
Salt	t	*	*	*	*
Sulphur (in smelter gas)	t	97 031	4 302 355	69 302	4 258 775
TOTAL			168 088 432		151 893 181
Fuels					
Coal	t	165 000	19 923 400	194 000	22 088 000
TOTAL			19 923 400		22 088 000
Structural Materials					
Lime	t	*	*	*	*
Sand and Gravel	t	2 529 230	*	2 540 266	*
Stone	t	4 203 659	20 072 809	3 177 687	19 074 460
TOTAL			38 962 787		37 380 574
GRAND TOTAL (CDN)			$ 807 202 968		$ 652 284 987

* confidential information GRAND TOTAL 2000 (CDN $) $772 546 475 **March, 2003**

The nonmetals sector of the industry contributed $151 893 181 (23%) to the value of mineral production, a 10% drop from the revised 2001 value. The largest contributor to the value of nonmetals production is potash. Both the value and quantity of potash decreased from 2001 levels. In addition to the regularly scheduled twenty-eight day annual maintenance shutdown, the Potash Corporation of Saskatchewan's Penobsquis mine ceased production for a total of seventy-two days for inventory adjustment. Peat, the second largest contributor ($45 020 608) to the value of nonmetals production, represented 30% of the sector's value. The quantity and value of peat produced fell for the second consecutive year. Salt and sulphur in smelter gas ranked next in value of production, with quartz and marlbeing minor contributors to the nonmetals sector.

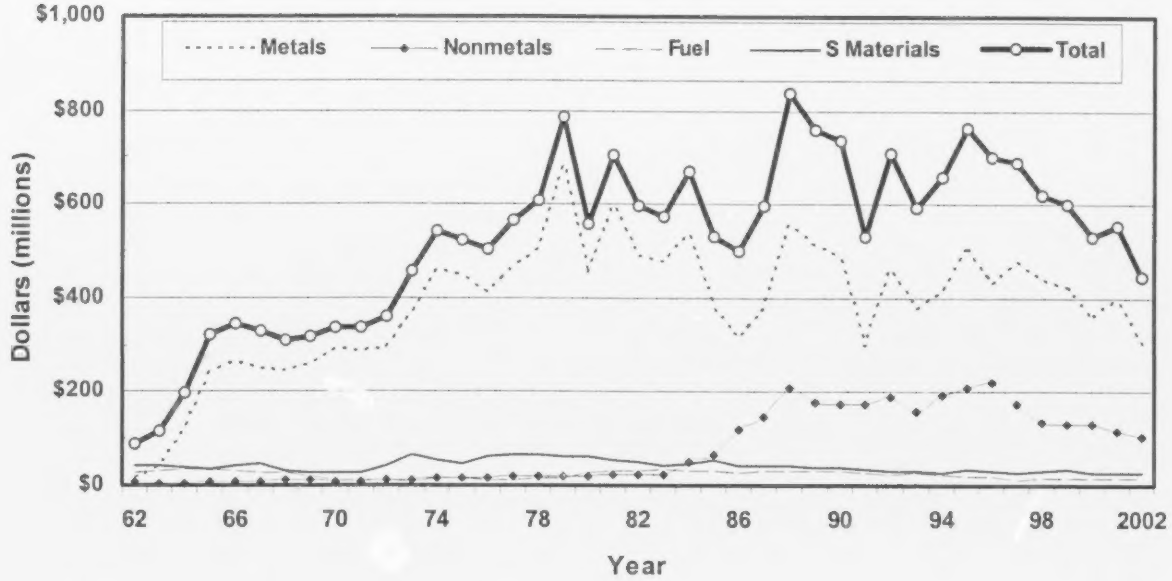


Figure 8. Value of mineral production in New Brunswick, 1961–2001. Abbreviation: S Materials – structural materials. Source: Natural Resources Canada (1986=100).

The value of coal produced by N.B. Coal Limited in the Minto–Chipman area increased by 11% to $22 088 000, as production rose by 18%.

The value of production for structural materials (lime, stone, sand and gravel) decreased 4% to $37 380 574. Sand and gravel production was down 2%, while stone production decreased by 5%. These commodities provide the raw materials for the construction industry in New Brunswick.

In 2002, New Brunswick ranked first among Canadian provinces and territories in its value of production for zinc, lead, bismuth, antimony and peat; second in potash; and third in silver and cadmium (Table 6). New Brunswick is the only producer of marl.

EMPLOYMENT

The mineral industry employed an average of 3167 people in 2002. The following shows employment (permanent and seasonal) by sector:

Metals	1447	Peat	1138
Potash	412	Structural Materials	94
Coal	76	**Total**	**3167**

Table 6. Rank of the Provinces and Territories in Value of Production for Leading Minerals in Canada, 2002 (P)

Mineral	NF	PE	NS	NB	PQ	ON	MB	SK	AB	BC	YT	NT	NV	Total Value Canada ($000)
Antimony				1										395
Bismuth				1										1 905
Cadmium				3	2	1								795
Clay Products			x		x	1		x	x	x				235 189
Coal			x	*				x	1	2				1 593 091
Copper				6	3	2	4	5		1				1 418 923
Gold	8			10	2	1	4	9	11	3	7	5	6	2 292 370
Lead				1						3			2	70 726
Lime				x	x	1	x		x	x				220 463
Marl				x										x
Peat	*	*	x	1	2		x	x	*	x				190 094
Potash				x				x						1 597 763
Salt			x	x	x	1	x	*	*					412 096
Sand & Gravel	9	12	7	8	4	1	6	5	2	3	10	11		1 047 388
Silver				3	2	4	5	7†		1	7†	7†	6	314 500
Stone	5		3	7	2	1	6		9	4		8		971 822
Sulphur (in smelter gas)				3	2	1				4				46 135
Sulphur (elemental)	x		x			x		*	1	x				563
Zinc				1	2	4	5	7		6			3	1 089 931

Source: Statistics Canada Catalogue 26-202

x Confidential information under the *Statistics Act of Canada*

* Unable to calculate ranking

† Tied with other producer

(P) Preliminary estimate

METALLIC MINERALS

Noranda Inc.–Brunswick Mine

COMPANY Noranda Inc.–Brunswick Mine (formerly known as Noranda Mining Inc.–Brunswick Mining Division). Head Office: P.O. Box 755, Ste 4100, BCE Place, 181 Bay St., Toronto, Ontario M5J 2T3. Telephone: (416) 982-7111; Mine Office: P.O. Box 3000, Bathurst, New Brunswick E2A 3Z8; Smelter Office: P.O. Box 2000, Belledune, New Brunswick E0B 1G0. The Chief Executive Officer is Derek Pannell, the President and Mine Manager is Jean Desrosiers.

RIGHTS In 1962, Brunswick Mining and Smelting Corporation Limited was granted surface and mineral rights to the No. 12 mine property.

LOCATION Brunswick owns Canada's largest zinc deposit and operates one of the world's largest zinc mines. The company also operates a concentrator and lead smelter. The Brunswick No. 12 mine (Figure 9: 1a) is about 24 km west of Bathurst in Gloucester County (Lat. 47° 28.5' N and Long. 65° 53.5' W; NTS 21 P/5W). The concentrator is adjacent to the No. 12 mine; the lead smelter (Figure 9: 1b) is at Belledune Point, about 45 km from the No. 12 mine.

HISTORY (Early history is described in Miscellaneous Report 13, "New Brunswick's Mineral Industry, 1993.")

In the summer and fall of 2000, the mine experienced heightened seismic activity underground, which resulted in one of the main production areas (the South Block) becoming unavailable for mining. The company embarked on an intensive campaign to rehabilitate the affected area through ground control and stress relief measures. These actions proved successful and the affected zone was brought back into the mine production plan. Average 2001 ore production, at 9863 t/d, was higher than in 2000. Average grades were also higher and, in fact, the mine achieved a record fourth quarter for metals production. However, in 2002, production bottlenecks and some continuing seismic activity led to a reduction in the production rate to 9 600 t/d.

EMPLOYEES In 2002, there were, on average, 908 regular and contract employees at the mine and 527 employees at the smelter.

RESERVES Proven and probable ore reserves: 21 058 607 t grading 0.35% Cu, 9.12% Zn, 3.64% Pb, 105.8g/t Ag.

PRODUCTION In 2002, 3 492 621 t of ore was milled.

Production	Copper	Lead	Zinc	Silver/Bulk
Grade	0.47%	3.40%	9.08%	109 g/t Ag
Recovery	56.49%	64.18%	87.44%	55.74% Ag
Concentrate	39 389 t	136 142 t	486 624 t	54 973 t bulk

The company produces zinc concentrate destined mainly for Noranda's Canadian Electrolytic Zinc refinery in Valleyfield, Québec, and a number of refineries in Europe; lead concentrate mainly for the Belledune smelter, with a small quantity (less than 10%) to Asia; bulk concentrate for Europe; and a copper concentrate divided between Noranda's Horne smelter in Québec, and Asia.

Zinc accounts for approximately 71% of the value of Brunswick's production. Lead, copper and silver represent most of the remaining 29%. Both mine and smelter (Figure 9: 1a and 1b) ran largely uninterrupted throughout the year. Overall mine employment declined from an average of 965 in 2001 to 908 in 2002. This figure comprised 801 regular staff and 107 contract employees. The company is expected to continue reducing employment levels in accordance with operational needs as older employees retire.

CanZinco Ltd.–Caribou Mine Division
(formerly East West Caribou Mining Limited)
Restigouche and Caribou Mines

COMPANY CanZinco Ltd., owned by Breakwater Resources Limited. The head office is 95 Wellington Street West, Suite 2000, Toronto, Ontario, M5J 2N7. The Chairman is Garth MacRae. Telephone: (416) 363-4798. The local address is P.O. Box 26, Bathurst, New Brunswick E2A 3Z1. Telephone: (506) 546-1999. The President and CEO of CanZinco Ltd. is Colin Benner.

RIGHTS In 2002, CanZinco Ltd., a wholly owned subsidiary of Breakwater Resources Ltd. held 190 claims (*Mining Act*, Chapter M14.1, S.N.B. 1985) and Mining Leases 255 (Restigouche) and 246 (Caribou).

LOCATION The Restigouche Zn, Pb, Ag, Cu deposit (Figure 9: 2a) is on the Road to Resources (Highway 180), about 80 km west of Bathurst in Restigouche County. (Lat. 47° 30.2' N; Long. 66° 33.5' W; NTS 21 O/7, 10). The Caribou mine (Figure 9: 2b) is also on the Road to Resources,

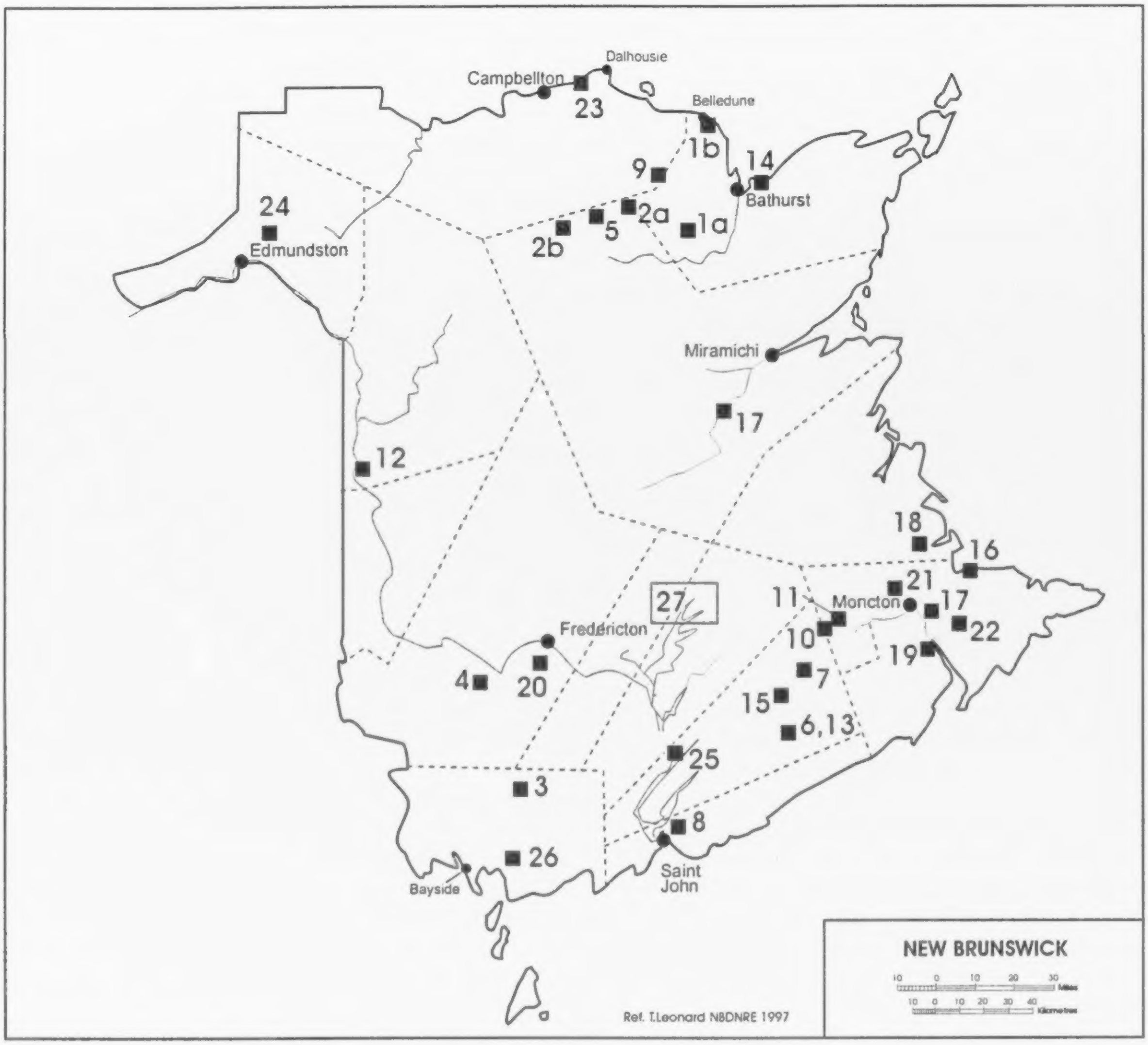

Dalhousie
Campbellton
23
Belledune
1b
14
9
Bathurst
24
2a
1a
5
2b
Edmundston
Miramichi
17
12
18
16
21
11
Moncton
17
27
Fredericton
10
22
19
7
4
20
15
6,13
25
3
8
26
Saint John
Bayside
NEW BRUNSWICK
Miles
Kilometres
Ref. T.Leonard NBDNRE 1997

Figure 9. Mines and quarries in New Brunswick, 2002. See Figure 10 for peat producers.

1a. Brunswick No. 12 mine (Noranda Inc.–Brunswick Mine); Zn, Pb, Cu, Ag
1b. Belledune smelter (Noranda Inc.–Smelter)
2a. Caribou mine (Caribou Mine Division of CanZinco Ltd.); Zn, Pb
2b. Restigouche mine (Caribou Mine Division of CanZinco Ltd.); Zn, Pb, Ag, Cu
3. Mount Pleasant deposit (ADEX Mining Corporation); Sn, In, Zn, Bi, W
4. Lake George mine (APOCAN Inc.); Sb
5. Murray Brook mine (Murray Brook Resources Inc. (a wholly owned subsidiary of NovaGold Resources Inc.)); Au, Ag, Cu
6. Potash Corporation of Saskatchewan Inc. (Cassidy Lake Division); processing facility
7. Potash Corporation of Saskatchewan Inc. (New Brunswick Division); potash, salt
8. Brookville Manufacturing Company; limestone, dolomite
9. Elmtree Resources Ltd.; limestone
10. Graymont (NB) Inc.; limestone
11. Lafarge North America Inc.; limestone
12. Upper Kent Lime Works Ltd.; marl
13. Atlantic Silica Inc.; silica
14. Chaleur Silica Ltd. (a Division of the Shaw Group); silica

about 50 km from Bathurst (Lat. 47° 33'N; Long. 66° 17.6' W; NTS 21 O/9).

HISTORY *Restigouche* (Early history is described in Miscellaneous Report 13, "New Brunswick's Mineral Industry, 1993.")

Marshall Minerals Corp. acquired the property rights from Placer Dome Inc. in March 1988. Results of an extensive drilling program to further define reserves and processability of the ore proved favourable and, in February 1989, Marshall registered under the Province's Environmental Impact Assessment (EIA) Regulation. The project was subsequently screened in because the deposit is situated on Charlotte Brook, which flows into Upsalquitch Lake, a well-known sport fishing area in a relatively undisturbed part of the province. The company completed its EIA report and in August 1990 received a positive response from the Lieutenant-Governor-in-Council to its proposal to proceed with project development. A security of $1 600 000 was required to ensure the environmental integrity of the operation.

Marshall proceeded no further than the EIA approval in its acquisition of required government approvals. Although delays associated with the EIA process, the sharp downturn in zinc prices, and the closure of the Caribou operation led the company to put the deposit up for sale, the company later renewed its interest in the deposit. In 1993 with federal/provincial funding, Marshall continued metallurgical studies on the ore and initiated environmental and pit design studies.

In 1995, Breakwater Resources Ltd., owner of the nearby Caribou mine, announced a metallurgical breakthrough that would enable the company to consider reopening the Caribou mine. Following a positive feasibility study and testing of Restigouche ore, Breakwater reached an agreement to purchase the Restigouche deposit from Marshall, with the intention of shipping Restigouche ore to the Caribou mill for processing. In 1996, Breakwater Resources, through its subsidiary East West Caribou Mining Ltd., received regulatory approval to mine the Restigouche deposit. Mining of the deposit began in the spring of 1997.

Caribou (Early history is described in Miscellaneous Report 13, "New Brunswick's Mineral Industry, 1993.")

In October 1990, East West Caribou Mining Ltd. announced the shutdown of the mine because of a significant decrease in the price of zinc, the economic recession and the Persian Gulf crisis. At the time of closure the operation had exceeded planned daily production and was running at

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Figure 9 concluded

15. Nelson Monuments Ltd.; dimension stone
16. Smith Cut Stone and Quarries Limited; dimension stone
17. Maritime Stone Works Inc.; dimension stone
18. Bastarache Stone Quarrie; dimension stone
19. Brunswick Limestone; dimension stone
20. Diamond Construction Limited; crushed stone
21. Moncton Crushed Stone, a Division of Modern Construction Ltd.; crushed stone
22. Acadia Crushed Stone Division of Modern Construction Ltd.; MacDonald Paving and Construction Limited; crushed stone
23. C.M. Stewart Company Limited; crushed stone
24. Clarence Daigle et Fils Ltée; crushed stone
25. Lafarge Construction Materials; sand and gravel
26. Jamer Construction Materials; sand and gravel
27. N.B. Coal Limited

2800 t/d. Early in 1992, East West Caribou's parent company, Breakwater Resources Ltd., entered into an agreement with the Roy Shipes Group of Tucson, Arizona, which would invest $5 000 000 in the company. Under the agreement, Arimetco International Inc. (President: Roy Shipes) assumed management of Breakwater. The debt held by Breakwater was renegotiated to a more manageable size and efforts were begun to review alternate methods for extracting metals from the complex Caribou ore. At the same time Caribou raised its tailings dam, which had the beneficial effect of submerging previously exposed tailings, thus curtailing the generation of acid from the impoundment.

GEOLOGY The Restigouche deposit occurs within the Middle Ordovician Mount Brittain Formation at the contact between feldspar-crystal poor (footwall) and feldspar-crystal rich (hanging wall) felsic volcanic rocks. The orebody is elongate in form and plunges to the northwest at 15–20°, oblique to the northeast structural trend. It is 490 m long and averages 90 m wide and 30 m thick. The deposit consists of two separate, stratabound, massive sulphide lenses that coalesce in the central part of the orebody. The sulphides comprise, in order of abundance, pyrite, sphalerite, galena, and chalcopyrite and have been traced to a vertical depth of 183 m to the north. Two northwest-trending diabase dykes transect the Restigouche deposit and are parallel to faults that exhibit minor offset.

EMPLOYEES Twelve people remain on site, two at Restigouche and the remainder at Caribou.

RESERVES Restigouche Marshall Minerals Corp. reported total reserves of 1 730 000 t grading 0.35% Cu, 5.36% Pb, 6.94% Zn, 112.1 g/t Ag, and 1.2 g/t Au. This includes 1 150 000 t of open pit reserves grading 0.38% Cu, 5.96% Pb, 7.71% Zn, 124.1 g/t Ag, and 1.37 g/t Au using a 6% combined lead–zinc cutoff.

Caribou Total reserves are 13 000 000 t grading 8.18% Zn, 3.52% Pb, 0.38% Cu, 102 g/t Ag and 1.4 g/t Au (*Northern Miner*, March 18, 1996).

PRODUCTION The two operations have a combined production target of 3000 t/d (1650 t/d for Caribou and 1350 t/d for Restigouche).

STATUS Operations remained suspended in 2002 pending an improvement in metal prices, refurbishment of the concentrator and securing of financing.

DEVELOPMENTS As part of the 1997 operating plan, the Caribou concentrator was extensively modified and expanded. It was redesigned to produce separate zinc and lead concentrates, rather than a bulk concentrate as was the case when it had last operated (in 1990). Surface preparation of the Restigouche open pit began in the fall of 1996. The first ore was produced in the spring of 1997. All ore from the Restigouche site was trucked to the Caribou mine site (Figure 9: 2b) for processing.

Falling metal prices and metallurgical difficulties encountered in processing the combined Caribou and Restigouche mine ores caused a suspension of operations at both mines in August 1998.

In 2001, BioteQ Environmental Technologies Inc., a Vancouver-based company, demonstrated the successful pilot-scale treatment of mine effluent at the Caribou site using its proprietary Biosulphide Process. This technology has the potential to remove metals profitably from slurried tailings as well as mine water. Plans for the construction of Canada's first commercial plant (also at the Caribou mine site) were announced in June of the same year, but work has not proceeded because of CanZinco's decision to temporarily suspend pumping from the underground workings.

ADEX Mining Inc.
(Mount Pleasant Mine)

Company ADEX Mining Inc. (formerly ADEX Mining Corporation) was formerly head-quartered at 172 King St. E., Suite 810, P.O. Box 13, Toronto, Ontario M5A 1J3. Telephone: (416) 947-1179. Having been de-listed from the Toronto Stock Exchange, the company no longer maintains a head office. Local address: P.O. Box 150, St. George, New Brunswick E0G 2Y0. The company's senior representative is former CFO Errol Farr.

Rights In 2002, ADEX Minerals Corp. held 102 claims (4 claims covering the mine area and 98 claims surrounding the mine area) under the *Mining Act*, Chapter M-14.1, S.N.B. 1985.

Location The Mount Pleasant Sn, In, W, Mo, Zn, Cu, Bi property (Figure 9: 3) is about 50 km northeast of St. Stephen, Charlotte County, New Brunswick (NTS 21 G/7W).

History (Early history is described in Miscellaneous Report 13, "New Brunswick's Mineral Industry, 1993.")

In December 1993, Piskahegan Resources Limited purchased the Mount Pleasant mine property from LAC Minerals Ltd. and Billiton Metals Canada Ltd. In 1994, ADEX Mining Corporation agreed to fund exploration and metallurgical work in the amount of $525 000, with the aim of earning the right to acquire a 50.1% interest in Piskahegan Resources Limited. On May 1, 1995, ADEX Mining Corporation acquired 100% of Piskahegan Resources Limited for $9 300 000 in cash and shares. Meanwhile, exploration and metallurgical testing continued while the company attempted to secure financing commitments. In November 1995, the name of the company was changed to ADEX Mining Inc.

In April 1996, ADEX Mining Inc. announced it had secured a financing commitment from the Malaysian Smelting Corp. (MSC), under which MSC would have the right to acquire up to 51% of ADEX for $28 000 000. The bulk of the investment was conditional on the delivery of a positive feasibility study for the development of the Mount Pleasant mine. Of the total investment, $2 000 000 was earmarked for the preparation of the study. In 1997 ADEX received a consultant's feasibility study. The conclusions were disappointing, as the estimated capital costs were too high to justify a production decision at that time.

Reserves (Source: ADEX Mining Corporation, Summary Prefeasibility Report, Oct. 1995)

Zone	Description	Category	Tonnage (t)	Grade						
				Sn (%)	Zn (%)	Bi (%)	In (g/t)	Cu (%)	MoS_2 (%)	WO_3 (%)
North	Endo & Contact Zones (u/g)	Proven	2 774 000	0.9	0.34	0.08	46.88	0.14	0.06	0.13
		Probable	60 000	0.92	0.34	0.08	46.88	0.14	0.06	0.13
		Possible	200 000	1.15	0.34	0.08	46.88	0.14	0.06	0.13
North	Deep tin (u/g)	Probable	2 140 000	0.6	0.8	0.06	121.19	0.12	0.05	0.08
North	Tin lodes (o/p)	Probable	2 000 000	0.2	0.96	—	125	0.1	—	—
North	W–Mo–Bi (u/g)	Possible	11 500 000	0.11	0.33	0.08	31.25	0.05	0.09	0.24
Saddle	Tin deposit (u/g)	Possible	2 000 000	0.92	0.34	0.08	46.88	0.14	0.06	0.13
Fire Tower	W–Mo–Bi (u/g)	Proven	9 000 000	0	0.08	0.1	31.25	0.05	0.2	0.4
Fire Tower N	Tin deposit (u/g)	Possible	250 000	0.19	2.24	0.13	206.25	0.14	0.2	0.28
Halo	(u/g and o/p)	Possible	15 000 000	—	1.5	—	109.38	—	—	—

Notes: 1 oz./ton equals 31.0025 g/t; u/g (underground); o/p (open pit)

The company's positive prefeasibility study was based on proven and probable reserves of 5 100 000 t grading 0.77% tin, 2.3 oz./ton indium, 0.5% zinc and 0.12% copper.

Production None since 1985.

Status The operation continues to be suspended. At year's end (2002), the property remained under care and maintenance.

Employees During 2002, one company officer was on site.

Developments The company continues to review its options with regards to the disposal of the property.

APOCAN Inc.
(Lake George Mine)

Company APOCAN Inc. The mine address is R.R. 1, Prince William, New Brunswick E0H 1S0. Telephone is (506) 366-2885. The Site Manager is Arthur Clark.

Rights In 2002, APOCAN Inc. held Mining Lease 250 under the *Mining Act*, Chapter M-14.1, S.N.B. 1985.

Location The Lake George antimony mine (Figure 9: 4) is approximately 15 km north of Harvey and 40 km west-southwest of Fredericton, York County (NTS 21 G/14E).

History (Early history is described in Miscellaneous Report 19, "New Brunswick's Mineral Industry, 1994.")

In 1987, Landmark Corporation (formerly Durham Resources Inc.) sold the property to Dominion Explorers Inc., one of its subsidiary companies. The low price of antimony concentrate combined with an unfavourable exchange rate for the Canadian dollar and low ore reserves forced Dominion Explorers Inc. to reduce annual operating costs as much as 12% in an attempt to remain viable. A work-sharing program was negotiated with the Federal government but not fully implemented. The operation continued through 1989 but was shut down permanently on January 19, 1990.

Following the closure of the mine, the property was purchased by APOCAN Inc.; Mining Lease 250 was transferred to the company in February, 1990. As a result of sharply higher antimony prices in the second half of 1994, APOCAN decided to resume operations at the Lake George mine. A Certificate of Approval to dewater the underground workings was issued in October, 1994 and in December work began on the installation of a new hoist.

Mine production officially resumed in July 1996. Production targets were reached or exceeded, but problems with the hoist caused a shutdown in December of the same year. The shutdown was prolonged by a sharp drop in the antimony price. Despite hopes that the price would recover sufficiently to allow a resumption of operations, high metal inventories in global markets, particularly China, continue to depress the price.

Reserves Proven, probable and possible ore reserves: 262 000 t of ore grading 3.45% Sb.

Status The operation remains suspended.

Developments At year's end, the mine continued to be under care and maintenance.

Murray Brook Resources Incorporated
(a wholly owned subsidiary of NovaGold Resources Inc.)
(Murray Brook Mine)

Company The Murray Brook gold, copper, zinc, lead deposit is owned and was operated by Murray Brook Resources Incorporated, whose parent company is NovaGold Resources Inc. The head office for NovaGold Resources Inc. is: 3 Spectacle Lake Drive, Suite 300, Dartmouth, Nova Scotia, B3B 1W8. Telephone: (902) 468-9270. The Chairman and Chief Executive Officer is Gerald J. McConnell; the President and Chief Operating Officer is Rick van Nieuwenhuyse.

Rights In 2002, Murray Brook Resources Incorporated held Mining Lease 252 under the *Mining Act*, Chapter M14.1, S.N.B. 1985.

Location The Murray Brook deposit (Figure 9: 5) is approximately 80 km west-southwest of Bathurst in Restigouche County (Lat. 47° 31.5' ; Long. 66° 25.8' ; NTS 21 O/9W). It is accessible via Highway 180 and a newly built access road.

History (Early history is described in Miscellaneous Report 13, "New Brunswick's Mineral Industry, 1993.")

Murray Brook Resources Inc. successfully completed the mining and vat-leach (indoor) processing of the gold-bearing gossan in early 1992. Known for its innovative extraction methods, the company began mining the underlying copper zone in late 1992, with the intention of extracting the metal using a bio-assisted, sulphuric acid, heap-leach (outdoor) method. Unforeseen delays caused the project to miss the seasonal window for this process and startup was delayed. The agreement that NovaGold Resources signed with Arimetco International Inc. and Breakwater Resources Ltd. to develop further the copper zone of the Murray Brook mine expired with neither company exercising its option.

Geology The Murray Brook deposit occurs within fine-grained sedimentary rocks that conformably underlie feldspar-phyric tuff of the Middle Ordovician Mount Brittain Formation and gradationally overlie quartz wacke and slate of the Miramichi Group. Previously, these sedimentary rocks were assigned to the Patrick Brook Formation, part of the Miramichi Group, but since the discovery of thin interbedded tuff layers, they are now included in the Mount Brittain Formation. The latter is structurally overlain by mafic volcanic rocks of the Boucher Brook Formation.

The deposit, which prior to mining was capped by a thick gossan, dips moderately to the northwest, plunges gently to the northeast, and appears to pinch out in that direction. It is surrounded by a 1–3 m wide halo of chloritized sedimentary rocks containing disseminated pyrite. The massive sulphides comprise pyrite,. sphalerite, chalcopyrite, galena, and arsenopyrite, in decreasing order of abundance and are divisible into copper, pyrite and lead–zinc zones. The copper zone occurs along the footwall and hanging-wall contacts and is generally separated from the lead-zinc zone by a zone of massive pyrite containing minor amounts of the other sulphides.

Employees There were no employees at the mine site in 2002.

Reserves Geological resources of the copper zone are 596 000 t grading 2.81% Cu.

Production During the three years the mine operated (1989–1992), 1 413 155g (45,434 oz.) of gold and 10 776 kg (346,457 oz.) of silver were produced.

Status The operation is now closed.

DEVELOPMENTS Under the impact of a substantially lower copper price, the company decided in 1998 not to proceed with further mining at Murray Brook, despite some initially encouraging results from exploration drilling at the site. During the year, the company completed a UTEM survey and drilled 14 holes on its Murray Brook deposit. The object of the drilling was to test the down-plunge extent of the known Cu zone and to determine if the deposit has a significant Pb–Zn zone prior to reclaiming the open pit. Modelling of the data from previously drilled vertical holes, using a commercially available 3-D software package, showed that the deposit was virtually untested toward the northwest, in the F_2 down-plunge direction. The drilling confirmed that the deposit does continue to the northwest. The best reported Cu intersection was in hole MB-98-3, which contained 13.6 m grading 4.35% Cu, including 7.0 m grading 7.29% Cu. The best reported lead–zinc intersection was in hole MB-98-5A, which contained 20.2 m grading 2.08% Pb, 6.07% Zn and 73.66 g/t Ag. Some reclamation work was done during the year, including the placement of the remaining stockpiled copper ore in the pit.

In 1999, the company received regulatory approval for its updated reclamation plan. Final reclamation began in the spring of 2000 and was completed in September. A program of environmental monitoring continues.

INDUSTRIAL MINERALS

The extraction and processing of industrial minerals resources in New Brunswick is, for the most part, directed to the following ten commodities: peat, potash, salt, limestone, dolomite, marl, silica, dimension stone, crushed stone, and sand and gravel. Several of these are exported to markets throughout the world.

PEAT

Twenty peat companies were active in the Province in 2002. Most of the development is concentrated in northeastern New Brunswick, mainly in the Acadian Peninsula of Gloucester County east of Bathurst, and in the Baie-Ste-Anne region of Northumberland and Kent counties to the east and southeast of Miramichi (Figure 10). About 80%of the production comes from Crown lands.

Peat production in 2002 totalled 13 260 000 bales, a level about equal to the preceding year. Shipments reached 12 387 000 bales, a slight decrease with respect to 2001. In June, inventories stood at 3 000 000 bales; in December they reached 7 000 000 bales. Note: beginning in 2002, inventory figures include an estimate of loose peat collected and piled in the field.

The United States continues to remain the principal export market for New Brunswick peat producers. In 2002, about 7 600 000 bales were shipped to the USA and 2 700 000 bales were distributed in Canada. The Japanese market, although diminishing, continued to favour peat of Canadian origin and accounted for 13% of New Brunswick's exports.

There are 37 Crown peat leases covering 38 peatlands; 28 peat leases were in production. Six additional operations are located entirely on private land.

ASB Greenworld Ltd.

COMPANY ASB Greenworld Ltd., 200, chemin Daigle, Pointe-Sapin (Nouveau-Brunswick) E9A 1T6. Telephone: (506) 876-3937. The Manager is Camille-Ernest Daigle.

Rights ASB Greenworld Ltd. holds Peat Lease No. 19 (826 ha – Peatland 324E) under the *Quarriable Substances Act*, Chapter Q-1.1, S.N.B. 1991.

Location Peatland 324E is in Pointe-Sapin, Kent County (Figure 10: 1).

History The company began site preparation in 1978. A peat lease was issued in 1982. In 1997, a plastic bag extruding and printing facility was added to the processing plant. A 200 ha extension was added to the company's existing lease in 2001.

Production The company produces milled peat (vacuum and Haku methods) and peat-based growing mixes.

Development The company continued to work toward the development of new peat-based growing mixes.

Employees In 2002, 15 to 55 persons.

Beausejour Peat Moss Inc.

Company Beausejour Peat Moss Inc., C.P. 2006, Grand-Barachois (Nouveau-Brunswick) E4P 8V1. The President is Paul-Émile Leger. Telephone: (506) 532-1172.

Rights The company holds Peat Lease No. 37 (167 ha – Peatland 76) under the *Quarriable Substances Act*, Chapter Q-1.1 S.N.B. 1991.

Location This peatland is approximately 5 km southeast of Shédiac, Westmorland County (Figure10: 2).

History In 1991, Beausejour Peat Moss Inc. applied for a Peat Exploration Licence for portions of Peatland 76 held by the Crown. During the same year, the company acquired freehold land in the northeastern sector of Peatland 76. In 1992, the licence application was dropped in favour of an Option. Peat extraction began on freehold land. In 1993, the company applied for and received a Peat Exploration Licence. A Peat Lease was issued for the Crown portion of the peatland in 1994. In 2000, a new processing plant was constructed.

Production The company produces milled peat and peat-based compost products.

Development Development of the production area continued. A hydrogeological study of the peatland was carried out by Cynthia Carrier under the Maritime Groundwater Initiative and the supervision of Yves Michaud, Geological Survey of Canada.

Employees In 2002, 3 to 23 persons.

Compagnie de Tourbe Fafard ltée

Company Compagnie de Tourbe Fafard ltée / Fafard Peat Moss Co. Ltd., 422, chemin Pallot, Inkerman (Nouveau-Brunswick) E8P 1B5. Telephone: (506) 336-9715. The Manager is Denis Mallet.

Rights Compagnie de Tourbe Fafard ltée holds Peat Lease Nos. 4 (218 ha – Peatland 530), 5 (505 ha – Peatland 532), 6 (607 ha – Peatland 529), 22 (206 ha – Peatland 353), 25 (393 ha – Peatland 41), 34 (398 ha – Peatland 40) and 41 (684 ha – Peatland 552) under the *Quarriable Substances Act*, Chapter Q-1.1, S.N.B. 1991.

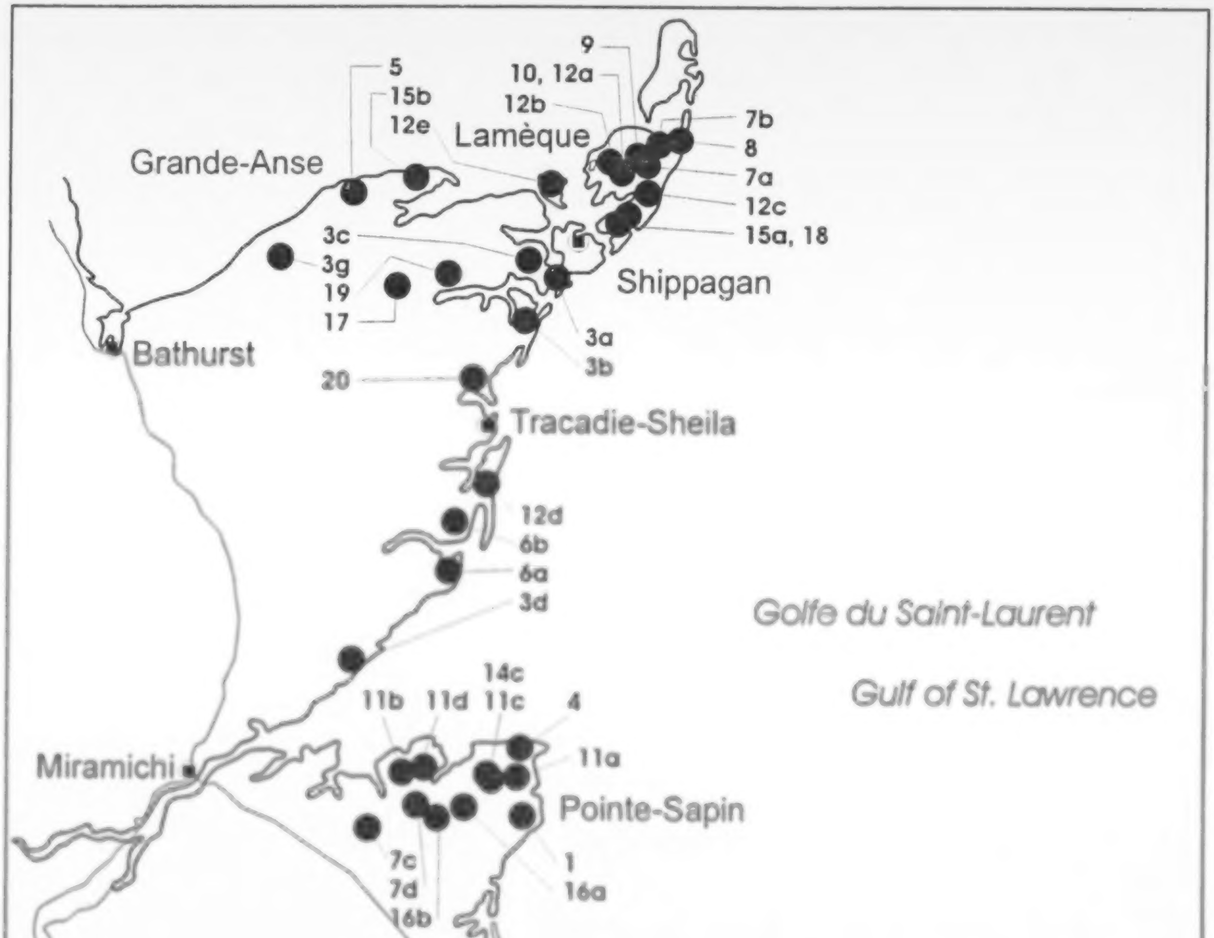
9
5
10, 12a
15b
12b
12e
Lamèque
Grande-Anse
7b
8
7a
12c
15a, 18
3c
3g
19
17
Shippagan
3a
3b
Bathurst
20
Tracadie-Sheila
12d
6b
6a
3d
Golfe du Saint-Laurent
Gulf of St. Lawrence
14c
11b
11d
11c
4
11a
Miramichi
Pointe-Sapin
7c
7d
16b
1
16a
Rogersville
Richibouctou
13
14b
14a
Legend
● Peat extraction site
3e
3f
Saint-Paul
Shédiac
14d
Moncton
2

Figure 10. Peat extraction sites in New Brunswick, 2002.

LOCATION Peatland 530 is off Route 113 south of Shippagan (Figure 10: 3a), Peatland 532 is 4 km south of Inkerman (Figure 10: 3b) and Peatland 529 is in Évangéline (Figure 10: 3c), all in Gloucester County; Peatland 353 is located 3 km southwest of Burnt Church, Northumberland County (Figure 10: 3d); Peatlands 40 and 41 are located near Birch Ridge, Kent County (Figure 10: 3e,f); Peatland 552 is located near Stonehaven, Gloucester County (Figure 10: 3g).

HISTORY Compagnie de Tourbe Fafard ltée began operations in New Brunswick in 1942 by opening a peatland near Shippagan (Peatland 530). New plants were opened in 1955 at Inkerman (Peatland 532) and in 1960 at Évangéline (Peatland 529). Initial production was block-cut peat but by 1973 the entire operation had changed to the production of milled peat. Since 1985, the production of peat mixes has become an important aspect of the New Brunswick operation. A perlite–vermiculite processing plant and a new peat-based growing mix plant were built at Peatland 532 in 1989. In 1998, the company completed a major corporate restructuring plan. Conrad Fafard, Inc. became a major shareholder of Québec-based Les Produits Horticoles Fafard ltée, which previously had controlling interest in la Compagnie de Tourbe Fafard ltée. A new company and wholly owned subsidiary of Conrad Fafard, Inc. named Fafard Products, Inc. was created, with head office in Inkerman, New Brunswick. That holding company is also majority shareholder of Compagnie de Tourbe Fafard ltée.

In 1987, Compagnie de Tourbe Fafard ltée acquired the operation of Les Équipements Tardif Inc. on Peatland 41 (Division Kent). Production from Peatland 41 had begun in 1984. In 1991, a peat lease was issued for adjacent Peatland 40. Production from that site began in 1999.

In 1988, Compagnie de Tourbe Fafard ltée acquired the assets of Burnt Church Peat Moss Co. Ltd. (Peatland 353 - Division Burnt Church). Production from the site began in 1991. A bagging plant was constructed in 1995.

Figure 10 concluded

1. ASB Greenworld Ltd.
2. Beausejour Peat Moss Inc.
3. Compagnie de Tourbe Fafard ltée : (a) Shippagan; (b) Inkerman; (c) Évangéline; (d) Burnt Church; (e) and (f) Birch Ridge; (g) Stonehaven
4. Good Earth Canada Ltd.
5. Gardenscape of Canada Limited
6. Heveco Ltd.: (a) Tabusintac; (b) Brantville
7. La Mousse Acadienne (1979) ltée: (a) and (b) Coteau Road; (c) St. Margarets; (d) Eel River
8. La Tourbe de Pigeon Hill ltée
9. La Tourbière de Petit-Shippagan
10. La Tourbière du Centre de l'Île ltée
11. Le Groupe Berger ltée : (a) St-Camille; (b) Bay du Vin; (c) Bois-Francs; (d) Eel River Bridge
12. Le Groupe-Qualité Lamèque ltée : (a) and (b) Lamèque; (c) Saint-Raphaël; (d) Rivière-du-Portage; (e) Pokesudie
13. Malpec Peat Moss Ltd.
14. Premier Horticulture ltée : (a) Rogersville; (b) Black Brook; (c) Manuels; (d) Lake Stream Lake
15. Sun Gro Horticulture Canada Ltd.: (a) Lamèque; (b) Maisonnette
16. Theriault & Hachey Peat Moss Ltd. : (a) and (b) Eel River Bridge
17. Tourbière 2000 inc.
18. Tourbière du Grand-Lac ltée
19. Tourbière L. M. ltée
20. Tourbière Tracadie ltée

In 2001, a peat lease was issued for Peatland 552.

Production The company processes milled peat at four plants located in Inkerman, Évangéline, Burnt Church and Birch Ridge. Peat-based growing mixes are manufactured at the Inkerman plant (Peatland 532).

Development No new development to report.

Employees In 2002, 21 to 193 for the combined operations.

Good Earth Canada Ltd.

Company Good Earth Canada Ltd., 5960 Broadway, Lancaster, N.Y. 14086, United States of America. Telephone: (716) 684-8111. The President is Guenther Burkhardt.

Rights Good Earth Canada Ltd. holds Peat Lease No. 30 (734 ha – Peatland 338) under the *Quarriable Substances Act* Chapter Q-1.1, S.N.B. 1991.

Location Peatland 338 is in Escuminac, 50 km east of Miramichi, Northumberland County (Figure 10: 4).

History The company was issued a peat lease in 1986 following the cancellation of Peat Lease No. 21 (Gulf Peat Co. Ltd.) in January 1986. Production began in 1987.

Production The company produces milled peat and peat-based growing mixes.

Development No new development to report.

Employees In 2002, 2 to 8 persons.

Gardenscape of Canada Limited

Company Gardenscape of Canada Limited, C.P. 90, 70, avenue Tocci, Grande-Anse (Nouveau-Brunswick) E8N 2T9. Telephone: (506) 732-2854.The Manager is Patricia Whelton.

Rights Gardenscape of Canada Ltd. holds Peat Lease No. 8 (166 ha) on Peatland 561, under the *Quarriable Substances Act* Chapter Q-1.1, S.N.B. 1991.

Location Peatland 561 is in the village of Grande-Anse, Gloucester County (Figure 10: 5).

History The company started a manual block-cut operation in 1961, which was mechanized in 1966. The conversion to a milled peat operation began in 1977. The plant was extensively modernized in 1991. In December 2002, the former lease holder, Grande Anse Peat Moss Co. Ltd. sold its interests to Gardenscape of Canada Limited.

Production The company produces milled peat.

Development Change of ownership.

Employees In 2002, 3 to 31 persons.

Heveco Ltd.

Company Heveco Ltd., 4534, Route 11, Tabusintac, (Nouveau-Brunswick) E9H 1J4. Telephone: (506) 779-9277. The Manager is Rolf Mecking.

Rights Heveco Ltd. holds Peat Lease Nos. 9 (1080 ha – Peatland 524) and 24 (174 ha – Peatland 522) under the *Quarriable Substances Act* Chapter Q-1.1, S.N.B. 1991.

Location Peatland 524 is 2 km southeast of Tabusintac (Figure 10: 6a) and Peatland 522 is located 2 km east of Brantville (Figure 10: 6b), Northumberland County.

History Incorporated in 1962, the company is the only major Canadian producer of block-cut peat. Since 1981, it also has produced milled peat. Production on Peatland 522 began in 1989. The plant was extensively modernized in 1995. In March 2001, the processing plant was destroyed by fire.

Production The company produces block-cut peat, milled peat, and peat-based growing mixes.

Development The processing plant was rebuilt and is now fully operational.

Employees In 2002, 11 to 70 persons.

La Mousse Acadienne (1979) ltée

Company La Mousse Acadienne (1979) ltée / Acadian Peat Moss (1979) Ltd., C.P. 2002, Lamèque (Nouveau-Brunswick) E8T 3N3. Telephone: (506) 344-2225. The President is Gilles Haché.

Rights La Mousse Acadienne (1979) ltée holds Peat Lease No. 13 (232 ha – Peatland 568) under the *Quarriable Substances Act*, Chapter Q-1.1, S.N.B. 1991. Two affiliated companies also hold peat leases: La Tourbe Chiasson ltée / Chiasson Peat Moss Ltd. (Peat Lease No. 23, 76 ha – Peatland 567); Tourbière Miramichi ltée / Miramichi Peat Ltd. (Peat Lease No. 31, 770 ha – Peatland 3 and Peat Lease No. 36, 580 ha – Peatland 301).

Location Peatlands 568 and 567 are in Coteau Road on Lamèque Island, Gloucester County (Figures 10: 7a,b); Peatland 3 is 6 km northeast of St. Margarets, Northumberland County (Figure 10: 7c), and Peatland 301 is 8 km southwest of Eel River Bridge, Northumberland County (Figure 10: 7d).

History Established in 1965, the company began production on Peatland 568 in 1966. Peat Lease No. 23 was obtained in 1982. Before 1987, all the production from Peatland 567 was processed at the facilities of La Mousse Acadienne (1979) ltée. A bagging plant was installed on Peatland 567 in 1987. Peat Lease No. 31 was obtained in 1988 and production from Peatland 3 began in 1989. Peat Lease No. 36, obtained in 1994, started to produce loose peat in 1999. In 2001, La Tourbière Rivière-à-l'Anguille ltée / Eel River Peat Moss Ltd. (Peat Lease No. 36) was amalgamated with Tourbière Miramichi ltée / Miramichi Peat Ltd. (Peat Lease No. 31).

Production The company and its affiliates produce milled peat.

Development Continued field preparation on Lease 36.

Employees In 2002, 21 to 126 persons for the four combined operations.

La Tourbe de Pigeon Hill ltée

COMPANY La Tourbe de Pigeon Hill ltée, C.P. 2067, 76 rue du Pêcheur, Lamèque (Nouveau-Brunswick) E8T 3N5. Telephone: (506) 344-5653. The President is Edmond Chiasson.

RIGHTS La Tourbe de Pigeon Hill ltée holds Peat Lease No. 18 (234 ha – Peatland 569) under the *Quarriable Substances Act* Chapter Q-1.1, S.N.B. 1991.

LOCATION Peatland 569 is in Pigeon Hill on Lamèque Island, Gloucester County (Figure 10: 8).
HISTORY A peat lease was issued in 1979. In 2000, the processing plant was reconstructed and modernized.

PRODUCTION The company produces milled peat.

DEVELOPMENT No new development to report.

EMPLOYEES In 2002, 1 to 20 persons.

La Tourbière de Petit-Shippagan

COMPANY La Tourbière de Petit-Shippagan, C.P. 2130, Lamèque (Nouveau-Brunswick) E8T 3N7. The contact person is François-Robert David, Director of Operations. Telephone: (506) 344-8064.
RIGHTS The company is operating on its own land.

LOCATION Peatland 579 is 7 km northeast of Lamèque, on the road to the Miscou bridge, Gloucester County (Figure 10: 9).

HISTORY The project was registered with the Department of the Environment early in 1993 and received approval in July 1993. Production of peat began in 1994.

PRODUCTION The company produces milled peat and sells it unprocessed, in bulk.
DEVELOPMENT No new development.

EMPLOYEES In 2002, 1 to 7 persons.

La Tourbière du Centre de l'Île ltée

COMPANY La Tourbière du Centre de l'Île ltée, 264, rue du Pêcheur Nord, Lamèque (Nouveau-Brunswick) E8T 1K2. The contact person is Pierrette Savoie. Telephone: (506) 344-8236.

RIGHTS The company is operating on its own land.

LOCATION Peatland 580 is in the town of Lamèque, Gloucester County (Figure 10: 10).

HISTORY The project was registered with the Department of the Environment in 1994 and received approval in November 1995. Production of peat began in 1996.

PRODUCTION The company produces milled peat and sells it unprocessed, in bulk.
DEVELOPMENT No new development.

EMPLOYEES In 2002, 0 to 3 persons.

Le Groupe Berger ltée

Company Le Groupe Berger ltée, 121, R.R. #1, St-Modeste (Québec) G0L 3W0. The President is Claudin Berger. Telephone: (418) 862-4462. The contact person is Andreas Avenriep. Telephone : (506) 228-9801.

Rights Le Groupe Berger ltée holds Peat Lease Nos. 29 (603 ha – Peatland 337), 33 (159 ha – Peatland 354), 39 (261 ha – Peatland 324N) and 43 (192 ha – Peatland 356) under the *Quarriable Substances Act*, Chapter Q1.1, S.N.B. 1991.

Location Peatland 337 is 2 km north of Saint-Camille (Figure 10: 11a) in Kent County; Peatland 354 is 35 km southwest of Bay du Vin (Figure 10: 11b), Peatland 324N is immediately west of Peatland 337, across Highway 117 (Figure 10: 11c); and Peatland 356 is 3 km west of Eel River Bridge (Figure 10: 11d) the latter three are all in Northumberland County.

History In 1985, Le Groupe Berger ltée acquired a Peat Exploration Licence that was converted to Peat Lease No. 29 in 1986. Production on Peatland 337 began in 1987. In 1988, Le Groupe Berger ltée applied for and received a Peat Exploration Licence for Peatland 354. Peat Lease No. 33 was issued in 1991. Production from Peatland 354 began in 1992. On December 31, 1996, Berger Inc. transferred all of its assets to Le Groupe Berger ltée, a federally chartered company. In 1999, a perlite-expanding facility was constructed at the St-Camille site to supply the new peat mix plant, which became operational at the end of the same year.

Production The company produces milled peat and peat mixes.

Development The company continued to expand its production fields on Peatland 337 and began field preparation on Peatland 324N. In September, a peat lease was issued for Peatland 356.

Employees In 2002, 78 to 159 persons.

Le Groupe Qualité Lamèque ltée

Company Le Groupe Qualité Lamèque ltée / Lameque Quality Group Ltd., 36, rue de la Tourbe, Lamèque (Nouveau-Brunswick) E8T 1A3. Telephone: (506) 344-2293. The President is Florent Chiasson.

Rights Le Groupe Qualité Lamèque ltée holds Peat Lease Nos. 7 (202 ha – Peatland 600), 14 (142 ha – Peatland 580), 16 (413 ha – Peatlands 516 and 517), 17 (115 ha – Peatland 576) and 28 (104 ha – Peatland 578) under the *Quarriable SubstancesAct*, Chapter Q-1.1, S.N.B. 1991.

Location Peatlands 580 and 578 are 4 km in Lamèque (Figure 10: 12a and 12b) and Peatland 576 is in Saint-Raphaël (Figure 10: 12c), Gloucester County; Peatlands 516 and 517 are in Rivière-du-Portage, Northumberland County (Figure 10: 12d); and Peatland 600 is on Pokesudie Island, Gloucester County (Figure 10: 12e).

History Established in 1971, La Tourbière de Lamèque ltée became a division of Le Groupe Qualité Lamèque ltée (La Tourbière de Lamèque / Lameque Peat Moss) in 1989. Production on Peatland 576 began in 1980. Production on Peatland 578 began in 1989. In 1993, a fire destroyed the main processing plant in Lamèque. The plant became operational again during the summer of 1994.

La Tourbière de St-Raphaël ltée became a division of Le Groupe Qualité Lamèque ltée (La Tourbière de St-Raphaël / St. Raphaël Peat Moss Ltd.) in 1989.

Portage Peat Moss Ltd. had started commercial production from Peatlands 516 and 517 in 1972. In 1985, Les Produits Canadien Suprême ltée, a former affiliated company of Le Groupe Qualité Lamèque ltée, acquired the operation. The operation is now a division of Le Groupe Qualité Lamèque ltée (Les Produits Canadien Suprême / Canadian Supreme Products Ltd.). In 1989, the company suspended operations. A resource evaluation survey was completed in 1990. In 1991, production resumed in selected areas; the peat is trucked to the Lamèque facility for blending and processing.

In 1960, a peat lease was granted to Bushland Products Limited and in 1967 was transferred to Atkins & Durbrow (N.B.) Ltd. Following a disastrous fire in 1978, the plant was rebuilt and production resumed in late 1980. La Tourbière de Pokesudie ltée / Pokesudie Peat Moss Ltd., a former subsidiary company of Le Groupe Qualité Lamèque ltée, acquired the property in 1988. The company became a division of Le Groupe Qualité Lamèque ltée (La Tourbière de Pokesudie / Pokesudie Peat Moss) in 1989. In January 2000, exceptionally high tides brought salt water on production fields at the Pokesudie peatland resulting in significant loss of production potential at that site. Part of the mine site has been reclaimed for agriculture (cranberry fields and associated water reservoir).

PRODUCTION The company produces milled peat and growing mixes.

DEVELOPMENT Expansion of production area and increasing activity level at the Rivière-du-Portage site. The company formally decided to close the Pokesudie site and has begun planning the restoration of that site.

EMPLOYEES In 2002, 30 to 112 persons.

Malpec Peat Moss Ltd.

COMPANY Malpec Peat Moss Ltd., C.P. 118, Rexton (Nouveau-Brunswick) E0A 2L0. Telephone: (506) 523-9161. The Manager is Joe Curry.

RIGHTS Malpec Peat Moss Ltd. holds Peat Lease No. 20 (499 ha – Peatland 213) under the *Quarriable Substances Act* Chapter Q-1.1, S.N.B. 1991.

LOCATION Peatland 213 is 3 km west of Rexton, Kent County (Figure 10: 13).

HISTORY The company is affiliated with Southern Importers, Inc., Greensboro, North Carolina, United States of America. It was issued a peat lease in 1982 and began production of milled peat in 1985. In 1995, the lease was expanded by about 250 ha. In the spring of 1997, a fire destroyed the bagging plant. The plant was rebuilt and full production resumed in 1998.

PRODUCTION The company produces milled peat.

DEVELOPMENT Field preparation in the northern part of the lease.

EMPLOYEES In 2002, 6 to 66 persons.

Premier Horticulture ltée

Company A subsidiary company of Premier Tech ltée, 1, ave Premier, C.P. 2600, Rivière-du-Loup (Québec) G5R 4C9. The contact person is Michel Vachon, Director of Operations. Telephone: (418) 862-6356.

Rights Peat Leases No. 35 (769 ha – Peatland 16), No. 38 (199 ha – Peatland 14), No. 42 (251 ha – Peatland 324N) and No. 44 (503 ha – Peatland 44) under the *Quarriable Substances Act*, Chapter Q1.1, S.N.B. 1991.

Location Peatland 16 is on Highway 126, 3 km south of Rogersville in Kent County (Figure 10: 14a). Peatland 14 is located 30 km west of Rogersville in Northumberland County (Figure 10: 14b). Peatland 324N is located southeast of Manuels in Northumberland County (Figure 10: 14c). Peatland 44 is located just north of Lake Stream Lake in Queens County (Figure 10: 14d).

History Entreprises Premier CDN ltée applied for a Peat Exploration Licence for Peatland 16 in 1991 and a licence was issued in that same year. In 1992, a Peat Lease was issued to the newly formed subsidiary company, Les Tourbières Premier Atlantique ltée. Initial production of peat began in 1994 and a bagging plant was constructed in 1995. In 1999, Entreprises Premier CDN ltée changed its corporate designation to Premier Tech ltée with Premier Horticulture ltée as a subsididary company that includes the New Brunswick operations. Peat Lease 38 was issued in 1999 with production from the site beginning in 2001. Peat Leases 42 was issued in 2001.

Production The company produces milled peat.

Development Development of production fields continued on Peatland 16. There was no production from Peatland 14 in 2002. The company started to construct an access road to its lease on Peatland 324N. In October, a peat lease was issued for Peatland 44.

Employees In 2002, 1 to 26 persons.

Sun Gro Horticulture Canada Ltd.

Company Sun Gro Horticulture Canada Ltd., 124, chemin de la Tourbe, Maisonnette (Nouveau-Brunswick) E8N 1P8. Telephone: (506) 727-3428. The Manager is Reynald Boudreau.

Rights Sun Gro Horticulture Canada Ltd. holds Peat Lease Nos. 10 (1390.6 ha – Peatlands 591 and 592) and 12 (396 ha – Peatland 562) under the *Quarriable Substances Act*, Chapter Q-1.1, S.N.B. 1991.

Location Peatlands 591 and 592 are 3 km southeast of Lamèque (Figure 10: 15a) and Peatland 562 is 6 km west of Maisonnette (Figure 10: 15b), all in Gloucester County.

History In 1964, Western Peat Company Ltd., a Canadian company owned by Red Wing Peat Corporation (USA), established a base of operations at Maisonnette (Peatland 562). In 1970, Red Wing Peat Corporation purchased Atlantic Peat Moss Co. Ltd. at Shippagan (Peatlands 591, 592 and 527). Atlantic Peat Moss Co. Ltd. had produced from Peatland 527 (1953–1971) and from Peatland 591 since 1952.

In 1974, S.B. McLaughlin Associates Limited of Toronto, Ontario, purchased the holdings of the major shareholder, Red Wing Peat Corporation, and assumed control. This was followed by the combination of the business operations of Western Peat Company Ltd. and Atlantic Peat Moss Co. Ltd. into Western Peat Moss Limited.

In 1980, Fisons, a British company, acquired a 50% interest in Western Peat Moss Limited. The joint venture company was renamed Fisons Western Peat Moss Limited and then changed to Fisons Western Corporation in January 1982, when Fisons acquired the remaining McLaughlin interests. Production from Peatland 527 ceased in 1971 due to fire hazard to the town of Shippagan and the site was converted to Peat Lease No. 26 in 1984. The new plant on Lamèque Island (Peatland 591) opened in 1981. The company changed its corporate name to Fisons Horticulture Inc. in 1989.

In 1993, Fisons Horticulture Inc. was acquired by Sun Gro Horticulture Inc. The New Brunswick operation is managed by Sun Gro Horticulture Canada Ltd.

Former Peat Lease No. 26 was terminated in 1994 after appropriate restoration work had been completed.

PRODUCTION The company produces milled peat and peat-based growing mixes.

DEVELOPMENT Continued expansion of production fields on Peatland 591.

EMPLOYEES In 2002, 65 to 145 persons.

Theriault & Hachey Peat Moss Ltd.

COMPANY Theriault & Hachey Peat Moss Ltd., 201, chemin Theriault-Hachey, Baie-Sainte-Anne (Nouveau-Brunswick) E9A 1N7. Telephone: (506) 228-4530. Elphège Theriault is President. The Chief Executive Officer is Gary Williston.

RIGHTS Theriault & Hachey Peat Moss Ltd. holds Peat Lease No. 11 (482 ha – Peatland 324W) and Peat Lease No. 27 (125 ha – Peatland 302A) under the *Quarriable Substances Act*, Chapter Q-1.1, S.N.B. 1991.

LOCATION Peatlands 324W and 302A are 6 km south of Eel River Bridge, Northumberland County (Figure 10: 16a and 16b).

HISTORY The company was formed in 1963 but block-cut peat had been produced from the site since 1961. In 1977, the block-cutting operation was converted to a milled peat operation. The company acquired a peat lease on Peatland 302A in 1985. Production on Peatland 302A began in 1990. A new processing plant was built in 1994.

PRODUCTION The company produces milled peat.

DEVELOPMENT New fields continue to be opened on Peatland 302A. Some block cut fields on Peatland 324W are being reconverted to vacuum milled peat production.

EMPLOYEES In 2002, 8 to 59 persons.

Tourbière 2000 inc.

Company Tourbière 2000 inc., 2223 Route 350, Maltampec (Nouveau-Brunswick) E8P 1N4. Telephone: (506) 727-5251. The President is Adrien Landry.

Rights. The company is operating on its own land.

Location Peatland 950 is located 5 km east of Paquetville, north of highway 350, Gloucester County (Figure 10: 17).

History The project was registered with the Department of Environment and Local Government in September 1999 and received approval in February 2000. Production fields were opened in the fall of 2000. Peat extraction began in 2001.

Production Milled peat sold unprocessed, in bulk.

Development No new development.

Employees In 2002, 1 to 2 persons.

Tourbière du Grand-Lac ltée

Company Tourbière du Grand-Lac ltée, 945, rue Sainte-Marie, Sainte-Marie-Saint-Raphaël (Nouveau-Brunswick) E8T 1S9. Telephone: (506) 344-7223. The President is Euclide Chiasson.

Rights. The company is operating on its own land.

Location Peatland 592 is located (Figure 10: 18).

History The project was registered with the Department of Environment and Local Government in November 2001 and received approval in January 2002.

Production Milled peat sold unprocessed, in bulk.

Development Site and field preparation. Start of peat production.

Employees In 2002, 1 to 2 persons.

Tourbière L.M. ltée

Company Tourbière L.M. ltée, 1081, Route 365, Gauvreau (Nouveau-Brunswick). Telephone: (506) 538-2632. The President is Laurie Chiasson.

Rights The company is operating on its own land.

Location Peatland 531A is located 3 km west of Haut-Pokemouche, Gloucester County (Figure 10: 19).

HISTORY The project was registered with the Department of the Environment in July 2000 and received approval in September of the same year. Field preparation followed with production beginning in 2001.

PRODUCTION Milled peat sold unprocessed, in bulk.

DEVELOPMENT No new development.

EMPLOYEES In 2002, 0 to 3 persons.

Tourbière Tracadie ltée

COMPANY Tourbière Tracadie ltée, 4092, boul. des Fondateurs, Saint-Isidore (Nouveau-Brunswick) E8M 1G3. The President is Sylvie Martin. Telephone: (506) 358-9800.

RIGHTS The company operates on its own land.

LOCATION Peatland 541 is located in Tracadie-Sheila, Gloucester County, along Highway 11 (Figure 10: 20).

HISTORY The project was registered with the Department of the Environment early in 1997 and received approval in June 1997. Production of peat began in 1997. The company changed its name from *Les Entreprises Jean-Eudes Martin et Fils ltée* to *Tourbière Tracadie ltée* in 2001.

PRODUCTION Milled peat sold unprocessed, in bulk.

DEVELOPMENT The company continued to develop its production area.

EMPLOYEES In 2002, 1 to 5 persons.

POTASH, SALT

Following its discovery in 1971, potash has rapidly become a major contributor to the value of industrial mineral production in New Brunswick. Until 1996, New Brunswick potash producers accounted for roughly 10% of Canada's productive capacity and between 10 and 15% of its annual production.

Potash Corporation of Saskatchewan Inc. (Cassidy Lake Division)

COMPANY Potash Corporation of Saskatchewan Inc. (Cassidy Lake Division) [PCS (Cassidy Lake)], Contact is Raoul Gauthier, General Manager, Potash Corporation of Saskatchewan Inc. (Cassidy Lake Division). Telephone: (506) 433-5445. Address is P.O. Box 5089, Sussex, New Brunswick E4E 5L2. Site Superintendent is Wally Farrah. Telephone: (506) 839-2146. Corporate office: Potash Corporation of Saskatchewan Inc., 122 – 1st Avenue S., Suite 500, Saskatoon, Saskatchewan S7K 7G3. Website: www. potashcorp. com.

RIGHTS Potash Corporation of Saskatchewan Inc. (Cassidy Lake Division) holds a Potash Agreement (858.7 ha), under Section 25(2) of the *Mining Act*, Chapter M14.1, S.N.B. 1985.

LOCATION The PCS(Cassidy Lake) processing operation (Figure 9: 6) is situated about 20 km southwest of Sussex, Kings County (NTS 21 H/12E).

HISTORY Potash and salt were discovered in the Salt Springs area by the New Brunswick Department of Natural Resources in 1973. Subsequent exploration and development rights to a 120 km2 reservation area were granted to International Minerals and Chemical Corporation (IMC). Full-scale exploration (22 drill holes) began in 1975, and was successful in confirming a significant ore body. Despite extremely encouraging results from the drilling program, IMC sold the property to Denison Mines Limited of Toronto in the latter part of 1978. Construction of a 5-m-diameter exploration mine shaft was commenced in September, 1979, and reached a target depth of 835 m by 1982.

In December 1980, Denison Mines Limited assigned a 40% interest in the property to Potash Company of Canada Limited (Potacan). Potacan, owned jointly by Entreprise Minière et Chimique, and Kali und Salz AG, handled potash sales while Denison was the overall development manager.

A feasibility study completed in 1982 resulted in a production decision announcement on February 7, 1983. Work on the No. 2 shaft, the production shaft, commenced in 1983, along with continued underground develop-ment and the construction of the surface infrastructure related to the mill facility, tailings storage, and brine disposal. By July, 1985, all pre-production work was completed and the first shipment of potash was destined for Colombiaon September 17, 1985.

Because of financial difficulties, Denison sold its interest in the property to its Potacan partners in 1991 and the name was subsequently changed to the Potacan Mining Company (PMC).

Throughout most of its 12 years of operation, Potacan generally maintained production levels greater than 75 % of its rated 1 300 000 product tonne capacity and had establisheditself as the Province's largest potash mining and milling facility. In the spring of 1997, water inflow occurred in the underground. Following unsuc-cessful attempts to reduce the flow to a manageable level, PMC's parent company, the Potash Company of Canada, announced the permanent suspension of operations at the Cassidy Lake mine about 6 months later. A plan was implemented to dispose of all surface tailings and carry out remedial site work. This closure reduced the Province's productive capacity by almost two thirds and resulted in the loss of hundreds of jobs.

Early in 1998, the former Potacan operation was purchased by the Potash Corporation of Saskatchewan Inc. The facility, now called *Potash Corporation of SaskatchewanInc. (Cassidy Lake Division)* utilizes the existing processing facility and related infrastructure to upgrade standard-grade potash imported from company operations in western Canada. The result is a higher-value granular product supplied to markets in eastern Canada and the United States. The Cassidy Lake operation has an annual milling capacity of 1 300 000 t and a compaction capacity of 1 000 000 t of granular product. The operation is linked by rail to the port of Saint John, 60 km to the west, a critical marketing advantage in the efficient global distribution of this important commodity.

RESERVES AND GRADE Not available.

PRODUCTION Production ceased in 1997. Since acquiring the Potacan asset, the Potash Corporation of Saskatchewan Inc. has operated a custom processing facility on the property. In 2001, PCS (Cassidy Division) compacted 234 000 t of Rocanville standard grade product to higher valued granular material. The market for most of this product is the eastern United States and Canada. The custom processing operation continued to operate throughout 2002.

EMPLOYEES Not available

DEVELOPMENT In March 1998, the Potash Corporation of Saskatchewan Inc. purchased all outstanding shares from Potacan's holding company, the Potash Company of Canada Limited (an equal partnership between Kali und Salz of Germany and Entreprise Minière et Chemique of France). PCS is using the former Potacan mill to upgrade standard product from its Rocanville operation in western Canada into a higher-value granular product (annual granular capacity of 1 000 000 t). A new and efficient rail car unloading facility was subsequently installed to accommodate the efficient off-loading of standard grade product from Saskatchewan.

Potash Corporation of Saskatchewan Inc. (New Brunswick Division)

COMPANY Potash Corporation of Saskatchewan Inc. (New Brunswick Division) [PCS(NB)], P.O. Box 5039, Sussex, New Brunswick E4E 5L2. Telephone: (506) 433-5445. The General Manager is Raoul Gauthier. Corporate office: Potash Corporation of Saskatchewan Inc., 122 - 1st Avenue S., Suite 500, Saskatoon, Saskatchewan S7K 7G3. Website: www.potashcorp.com.

RIGHTS Potash Corporation of Saskatchewan Inc. (New Brunswick Division) holds a Potash Agreement (19 165.5 ha), under Section 25(2) of the *Mining Act*, Chapter M-14.1, S.N.B. 1985.

LOCATION The PCS(NB) mine/mill facility (Figure 9: 7) is on the north side of Highway 2, about 5 km east of Sussex, Kings County (NTS 21 H/11W, 21 H/14W).

HISTORY Following the discovery of potash in the Plumweseep–Penobsquis area by the New Brunswick Department of Natural Resources in 1971, exploration and development rights covering a 360 km2 reservation area were granted to the Potash Company of America in 1973. After a comprehensive exploration program and feasibility study, the company proceeded with the construction of a 5-m-diameter exploratory mine shaft in the spring of 1978. The exploration shaft was completed in April and underground exploration was completed in October of 1980. On October 27, 1980, the Potash Company of America announced that it was proceeding to production with a mine capacity of 900 000 t/a although initial capacity would be 630 000 t/a.

Mine development, mill construction, and the Courtenay Bay potash shipping terminal in Saint John were completed in 1983. The first potash was produced from the mill on July 17, 1983. The first shipment of potash through the port facility in Saint John took place early in 1984.

After purchasing PCA early in 1986, Rio Algom Limited spent more than $30 000 000 on improvements designed to bring the Sussex mine up to its rated capacity of 635 000 product tonnes per year by April of 1987.

In 1993, the assets of Potash Company of America (a Division of Rio Algom Limited), including the New Brunswick mine and the Saint John port facility, were acquired by Potash Corporation of Saskatchewan Inc.

RESERVES AND GRADE Based on geophysics, surface and underground exploration drilling and mine development, PCS(NB) estimates the mine has a proven reserve of 36 300 000 t of recoverable ore and 11 900 000 t of estimated KCl finished product (PCS 10K Form, p. I-6), filed 03/26/03). Given these proven reserve estimates, the operation would have a reserve life of approximately 15 years at current rates of full productive capacity (785 000 t of KCl product in 2002) and current technology (PCS 10K Form, p. I-6), filed 03/26/03). Probable reserves have been reported at 158 300 000 t (recoverable) with 51 700 000 t of estimated finished KCl product. Combined proven and probable reserves indicate a reserve life of 80 or more years at full current productive capacity and utilizing present available technology (PCS 10-K Form, p.I-6; filed 03/26/03).

PRODUCTION Potash and salt production commenced in 1983. PCS (NB) has an annual production capacity of 785 000 t KCl (PCS 2002 Annual Report, p. 25). In 2002, 599 000 t of KCl product was produced, a slight decrease from the previous year. (PCS 2002 Annual Report, p.25). The company reported that potash productionin 2002 was affected by "aggressive competition in offshore markets resulting in lost sales and lower prices" (PCS 2002 Annual Report, p. 25)

In conjunction with its potash mining operation PCS(NB) also mines salt. In 2002 salt production was reported at 540 000 tonnes (PCS 10K Form, p.I-5, filed 03/26/03). Some salt is consumed regionally; however, most is trucked to and exported from the Port of Saint John. The material is sold exclusively to the salt division of Cargill Incorporated.

EMPLOYEES Average of 374 persons for 2002.

DEVELOPMENT In the late spring of 1998, a small brine inflow was discovered in a section of the mine. Since its detection, PCS(NB) officials have been vigilant in their analysis of the situation. The inflow continued to be monitored and controlled throughout 2002; however, it has contributed to increasing production cost at the facility (PCS 10K Form, p.I-5, filed 03/26/03).

Late in 2000, natural gas was discovered near the PCS(NB) Sussex mine site. Further evaluation of the "McCully Field" was continued in 2001 by PCS(NB) and its joint venture partner, Corridor Resources Inc. The company is optimistic that they will be able to utilize this potential energy source in their potash milling process by mid 2003 (PCS 10K Form, p.I-4, filed 03/26/03).During the investigation of the natural gas potash was detected south and east of the existing mining operation. The company has drilled five holes in the area and has confirmed what looks like a significant deposit. The company is continuing to explore this new potash resource for possible future development (PCS 10K Form, p.I-4, filed 03/26/03.

LIMESTONE, DOLOMITE, MARL

The leveling off of the upward production trend established in recent years at New Brunswick's limestone and dolomite operations continued in 2002. Limestone and dolomitic limestone were processed from five operations: Brookville Manufacturing Company of Saint John; Elmtree Resources Ltd. near Bathurst; Graymont (NB) Inc. (formerly Havelock Lime, a Division of Goldcorp Inc.) of Havelock; Lafarge Canada Inc. of Havelock; and Upper Kent Lime Works Ltd., north of Bristol (Figure 9: 8–12).

The Province's limestone industry manufactures a range of chemical and pulverized products featuring agricultural, calcined and hydrated lime, fluegas desulphurization limestone as well as aggregate.

Brookville Manufacturing Company

COMPANY Brookville Manufacturing Company, P.O. Box 2332, Station C, Saint John, New Brunswick E2L 3V6. Telephone: (506) 633-1200. The company's owner and General Manager is Malcolm Hoar.

RIGHTS Mineral rights through Original King's Land Grant.

LOCATION Brookville, East Saint John, Saint John County (Figure 9: 8). The quarry and crushing operations are between Highway 1 (Sussex–Saint John Highway) and Highway 100 (Rothesay

Highway), approximately 2 km east of their junction. Access to the quarry is via the Rothesay Highway (NTS 21 H/5).

History The limestone/dolomite quarry and processing facility established at Brookville Manufacturing has a history of continuous operation for over 75 years (1920). The privately owned company primarily produces pulverized limestone and dolomitic limestone for the agricultural industry, a wide range of construction aggregate materials and other products.

Brookville, originally owned and operated by H.G.S. Adams, remained a family business until 1972 when it was purchased by Moosehead Breweries of Saint John. Moosehead succeeded in running the business almost 25 years before selling to its present owner and former Brookville employee, Malcolm Hoar, in 1994–95.

Reserves and Grade Although resource estimates of limestone and dolomite at Brookville are not publicly available it appears there is an adequate stone supply for many years depending on its quality and availability at present levels of production. In 1998, a company official reported "about 70 years left in the life of the dolomite limestone quarry" (Heavy Construction News, June, 1998).

The calcium and magnesium content of the stone varies throughout the quarry, from areas of high-calcium limestone to areas of high-magnesium dolomite. Most production is centered in the more dolomitic areas where grades fluctuate from 40 to 45% $MgCO_3$.

Production The company, which quarries and processes 200 000 to 300 000 t of limestone/dolomite each year, produces dolomitic agricultural lime, a wide range of aggregate for construction and other related purposes. Apart from New Brunswick, the company has marketed materials in Nova Scotia, Prince Edward Island, and the New England States.

Brookville has a long-standing history of supplying aggregate to the concrete industry. In 1998, the company was chosen to supply concrete aggregate for 15 000 m of pre-stressed concrete girders to be used on the 195 km highway construction project between Fredericton and Moncton in southern New Brunswick. The company maintains a stockpile of construction and agricultural materials in excess of 120 000 t, which are utilized in the manufacture of more than 40 different products.

Employees Average of 21 persons in 2002.

Development Similar to other limestone operations in New Brunswick, Brookville has been considering various options directed at expanding its product line into several new value-added agricultural and related products. The company continues to be a major supplier of aggregate material in southern New Brunswick.

Elmtree Resources Ltd.
(Sormany Quarry)

Company Elmtree Resources Ltd., P.O. Box 665, Bathurst, New Brunswick E2A 3Z6. Telephone: (506) 546-6382. The Executive Officer and President is A. Buzas, and the Manager and Vice-President is M. Buzas.

Rights Elmtree Resources Ltd. holds Quarry Lease No. 27 (84.3 ha) under the *Quarriable Substances Act*, Chapter Q-1, R.S.N.B. 1968 as well as Mining Lease 247 (161.1 ha; Armstrong Brook), Mining Lease 248 (171.3 ha; Sormany) and Mining Lease 249 (245.94 ha; Elmtree) and several claim blocks under the *Mining Act*, Chapter M-14.1, R.S.N.B. 1986.

LOCATION Elmtree operates a quarry and adjacent processing facility several kilometres west of Sormany, in northern New Brunswick (Figure 9: 9). The operation is about 30 km west of Bathurst, and adjacent to the Millstream River (NTS 21 O/9).

HISTORY Although the limestone near Sormany was mapped by J.L. Davies (Geological Surveys Branch) in 1959, it was not until 1982 that Elmtree Resources Ltd. mapped and sampled the deposit in detail. Two holes were drilled to further test the extent and grade continuity of the limestone at depth. Results were encouraging enough for the company to eventually proceed with quarry development and establish an on-site processing facility in the early 1990s.

In 1992, quarry operations shifted from the company's original Elmtree site near Petit Rocher to the present Sormany location, about 34 km to the southwest. All operations are consolidated at the Sormany site, with Elmtree's former location serving as a storage and distribution point for selected limestone products.

RESERVES AND GRADES Initial exploration (early 1980s) indicated possible reserves in excess of 8 000 000 t of limestone. Recent and more detailed reserve estimates are not publicly available.

PRODUCTION Between 40 000 and 50 000 t of flux-grade material is supplied annually to the nearby smelter at Belledune. In addition to this and other products, over 100 000 t of (>90% $CaCO_3$) limestone is supplied annually as a flue-gas desulphurization (FGD) agent to two hydrocarbon-fired power plants in northern New Brunswick. One facility is situated nearby (20 km) at Belledune while the other is at Dalhousie, 50 km north of the Elmtree operation (see Figure 9).

DEVELOPMENT A new quarry site was established a few hundred metres west of the original Sormany quarry in 1998. In 1999, both quarries were connected facilitating improved extraction efficiencies. The company is also considering development options on its Armstrong Brook dolomite property about 25 km west of Bathurst and plans to extract some stone for testing at its Sormany-based processing facility. The search for additional limestone and dolomite resources in the region resulted in several claims being staked to the east of the company's Sormany processing facility in 2000.

In 2002, Elmtree continues operations at its newly expanded Sormany site, 35–40 km west of Bathurst and continued exploration activity on an interesting dolomite property a few kilometres east of its Sormany mine-processing operation

EMPLOYEES Average of 16 persons in 2002.

Graymont (NB) Inc.
(Havelock Quarries)

COMPANY Graymont (NB) Inc., 4634 Route 880, Havelock, New Brunswick E4Z 5K8. Telephone: (506) 534-2311. The General Manager is André Van Agten.

RIGHTS Graymont (NB) Inc. holds Mining Lease 243 (355.0 ha) and Mining Lease 244 (182.4 ha), under the *Mining Act*, Chapter M-14.1, S.N.B. 1985. Lease 243 includes the operating quarry at Samp Hill and Lease 244 includes the plant. The company also holds several claim blocks in the Havelock, Sussex and Canaan areas.

LOCATION The company operates a quarry at Samp Hill (Figure 9: 10), about 5 km west of Havelock. A processing facility is situated less than 1 km east of the Village (NTS 21 H/13W).

HISTORY Quarrying has been on-going in the Havelock area since 1938 by Havelock Lime Works Ltd., Havelock Lime (a division of Goldcorp Inc.), and Graymont (NB) Inc. The original company was incorporated in 1964, and in 1970 a subsidiary company, Havelock Processing Ltd., was formed to manage the manufacturing of quick and hydrated lime. In 1984, Dickenson Mines Ltd. purchased 60% interest in the Havelock group of companies. In 1987, the remaining 40% was acquired.

In 1989, Goldcorp Inc. gained control of Dickenson Mines and it's affiliated companies. Fives years later (1994) the assets of Goldcorp, Dickenson, and two other companies were reorganized into a new corporate structure and at that time Havelock Lime's company name was modified to reflect the new corporate identity – Havelock Lime (a division of Goldcorp Inc.).

Since Dickenson's purchase of Havelock's assets, several improvements to the facility have been realized. Some of these have included the construction of a 330 t/d annular-shaft kiln (completed in 1989) to improve fuel economy, provide increased production capacity and provide long-term market competitiveness. A new 10 t/h hydrator improved production efficiency and in 1991, a wash plant was commissioned, providingbetter-quality stone feed to the kiln.

In 1996, Havelock Lime's reputation as a marketer of quality lime products was enhanced by its qualification for the internationally recognized ISO 9002 quality assurance accreditation.

To assist in funding requirements pertaining to the redevelopment of its Red Lake gold mine in northwestern Ontario, Goldcorp announced late in 1999 that it was selling the Havelock Lime operation. The sale was com-pleted on December 31, 1999 for a reported net proceeds of US $20 588 000 (Cdn$29 650 000) to Graymont Ltd. of Vancouver, British Columbia (Heavy Construction News, June 1998). Graymont, a privately owned Canadian corporation, is the third largest lime producing company in North America. The Havelock facility, renamed Graymont (NB) Inc., is to be closely associated with Graymont's three lime plants and associated quarries in Quebec [Graymont(QC) Inc.].

RESERVES AND GRADE Limestone requirements are partially supplied from the company's Samp Hill quarry with up to 400 000 t purchased annually from the neighboring Lafarge North America Inc. quarry under the terms of a negotiated multi-year limestone supply agreement. In its 1997 Annual Report, Goldcorp Inc., Havelock's former parent company, indicated that at the current rate of production Havelock Lime has limestone reserves to last approximately 30 years. Although not fully delineated, total reserves from company holdings in the Havelock area were estimated at 8 300 000 tons (Goldcorp Inc., Annual Report, 1997).

PRODUCTION In 2002 the company processed between 300 000 and 400 000 t of limestone and high magnesium limestone. Chemical process stone (for use as flux in nonferrous smelters, the glass industry, pulp and paper mills, and fibreglass), pulverized stone (for use in dusting mines and for agricultural purposes), poultry grit, and crushed stone (for use as concrete aggregate and for general construction) are currently produced. Havelock [Graymont (NB) Inc,] remains the only source of quick and hydrated lime in the Maritimes.

EMPLOYEES An average of 47 persons in 2002.

DEVELOPMENT Over the last few years, Havelock Lime [Graymont (NB) Inc.] has been consolidating and extending reserves of high-calcium limestone in the Havelock area. Exploration and proposed for quarry expansions continued in 2002 with preliminary planningand predevelopment work.

In 2002, Graymont continued quarryoperations at Lafarge's McGee quarry.

Lafarge Canada Inc. (subsidiary of Lafarge North America Inc.)
(Havelock Quarries and Cement Plant)

Company Lafarge Canada Inc. The plant address is 4877, Route 880, Havelock, New Brunswick E4Z 5C1. Telephone: (506) 534-2301. The Manager is Arnold Mallais. Website: www. lafargecorp.com

Rights Lafarge Canada Inc. holds Mining Lease 245 (632.5 ha), which includes the existing plant and quarries, and Mining Lease under the *Mining Act*, Chapter M-14.1, S.N.B. 1985. The company also holds mineral claims on a limestone and a gypsum property near Havelock and Petitcodiac, respectively.

Location The limestone quarries and cement plant (Figure 9: 11) are adjacent to Highway 880, about 5 km east of Havelock, Westmorland County (NTS 21 I/3W).

History Limestone quarries near the plant have been supplying raw material for the manufacture of cement since 1952. After 1982, production of cement from local raw materials was limited to fulfilling market requirements for oil well and other specialty cements. The plant was maintained as a grinding operation for imported Nova Scotia clinker until 1987 when the company closed its cement production facility; however, it continues to quarry stone used for other purposes. The plant property now serves only as a distribution point for products from another company operation in the Maritimes.

The McGee quarry was opened in 1986 just north of Highway 880, less than 1 km east of the plant. This property, partially investigated in 1976, was known to contain extensive reserves of high-calcium limestone. A drilling program was undertaken in 1985 to verify the quality and extent of the deposit prior to the establishment of the new quarry site.

Since opening the McGee quarry site, Lafarge has supplied limestone to an unrelated lime plant operating at Havelock. The operation has also supplied limestone from other quarry locations on its property for the manu-facture of various specialty cement products at a company cement plant in Nova Scotia. Aggregate material has been supplied to regional operations of Lafarge Construction Materials (i.e., ready-mix cement plants) on an as-required basis for several years.

Reserves and grade Potential medium- to high-grade limestone (i.e., 50–53% CaO) resources are estimated to be fairly extensive on properties held under mining lease by Lafarge Canada Inc., although no specific values are publicly available. In addition, the company maintains a 288 ha claim block in the Springhill area several kilometres southwest of the former cement plant and its adjacent quarries.

Production Historically, Lafarge has produced up to 400 000 t of limestone annually, primarily for use in cement manufacturing. However, since the closure of its plant, 15 years ago, stone specifically quarried for cement production has been minimal. Despite the closure of its Havelock cement operation, Lafarge has continued to produce stone mostly from its McGee quarry, selling 200 000 to 300 000 t annually to Graymont (NB) Inc. Intermittent production in the range of a few tens of thousands of tonnes a year is shipped on-demand to Lafarge's Nova Scotia cement manufacturing operation at Brookfield, company ready-mix operations in Sussex and Moncton and other local markets. In 2002 the company also carried out some custom crushing and storage of high magnesium agricaultural limestone for Graymont (NB) Inc.

Employees Average of 5 persons in 2002.

Development. Lafarge Canada Inc.'s Havelock operation continued to supply limestone from its quarries in 2002. In addition to this limestone production, the company processed and stored 70 000 t of magnesium limestone for Graymont (NB) Inc. from that company's Samp Hill quarry, 5 km west of Havelock.

The company continued with its reclamation work in accordance with development of its McGee quarry where some pre-development is underway prior to expanding it to the west.

Upper Kent Lime Works Ltd.

Company Upper Kent Lime Works Ltd., R.R. 3, Bath, New Brunswick E0J 1E0. Telephone: (506) 278-5359. Contact person is Douglas Lloyd.

Rights Upper Kent Lime Works Ltd. holds Mining Lease 242 (16.2 ha), under the *Mining Act*, Chapter M-14.1, S.N.B. 1985.

Location This marl deposit (Figure 9: 12) is in the bottom of a partially drained lake at Maplehurst, 15 km north of the Village of Bath (NTS 21 J/12).

History The deposit has been worked since the late 1950s and was acquired by the present owners in 1973.

Reserves and Grade Less than 30 000 t of marl ranging between 85% and 95% $CaCO_3$ remain at this location.

Production Marl is extracted from a shallow lake bottom using a dragline, spread on the adjacent hillside to dry, and stockpiled. It is then screened to remove pebbles, twigs, etc., and trucked to local farmers for use on potato fields. The main operating period is late April to June. An additional two- to three-week period of operation typically occurs in the fall to stockpile material. Annual sales vary but are generally less than 2000 t.

Employees 3–4 persons (seasonal)

Development Continued operation.

SILICA

Atlantic Silica Inc.

Company Atlantic Silica Inc., 4 Osborne Road, Poodiac, New Brunswick E4E 5K5. Telephone: (506) 433-5890. Fax: (506) 433-4619. President and General Manager is Robert Pickett.

Rights Atlantic Silica Inc. (formerly Sussex Silica Inc.) holds Mining Lease 241 (599.8 ha), under the *Mining Act*, Chapter M-14.1, S.N.B. 1985.

Location This deposit of unconsolidated silica sand and pebbles (Figure 9: 13) is about 16 km southwest of Sussex, immediately northeast of Cassidy Lake (NTS 21 H/12E).

History The deposit was discovered in 1981. After identifying sufficient reserves of high-quality sand, a pilot plant was set up in 1983 for product testing and marketing. Full-scale production began in 1986. In the fall of 1986, the company mined several thousand tonnes of lump silica and sand of various sizes. The lump silica was used in the manufacture of silicon metal and silicon carbide at Becancour, Québec. The company's assets were acquired in 1993 from Baskatong Quartz Ltd. (Sussex Silica Inc.)

RESERVES AND GRADE In the late 1990s, company literature (Atlantic Silica fact sheet, 1997) reports proven reserves of 25 000 000 t of unconsolidated quartz sand and pebbles in association with minor amounts of kaolin clay. The silica approaches 100 % SiO_2, 0.04–0.15% Fe_2O_3; 0.02% CaO; 0.15% Al_2O_3 and trace amounts of TiO_2.

PRODUCTION Existing capacity of the operation is estimated at 100 t/h.

EMPLOYEES An average of 5 persons in 2002.

DEVELOPMENT The company has marketed several specialty products, including sand blasting material; filtration, tree nursery, and decorative sands; and sands used in the manufacture of glass and fibreglass. In 1998, Atlantic began supplying silica for a Sussex-based manufacturer of agglomerated tiles for interior and exterior floor and wall applications.

Chaleur Silica (a Division of The Shaw Group)

COMPANY Chaleur Silica (an operation of Shaw Resources), P.O. Box 60, Shubenacadie, Nova Scotia B0N 2H0. Telephone: (902) 883-2220. FAX: (902) 758-3622. Contact person is Glen Hardie. Website: www. shawgroupltd.com

RIGHTS Shaw Group has a 27-acre lease agreement with the landowner.

LOCATION The Bass River silica quarry (Figure 9: 14) is immediately south of Highway 11, approximately 6.5 km east of Bathurst, Gloucester County (NTS 21 P/12E).

HISTORY The property was originally explored by East Coast Smelting and Chemical Company in 1961, but the property remained undeveloped until 1974 when World Wide Explorations opened a small quarry. Purchased by Godin M-E in 1976, the operation was expanded and modernized. It was operated under the name Chaleur Silica Limited until the late 1980s. In 1992, the Shaw Group Limited of Nova Scotia purchased the company, changing the name of the operation to Chaleur Silica.

RESERVES AND GRADE An estimate of reserves is not available for this property. The resource is primarily a quartzose sandstone with an average SiO_2 content of 90%.

PRODUCTION The quarry operates on a seasonal basis. The market depends almost entirely on the sale of silica flux to the Belledune smelter. Annual production is generally between 20 000 and 25 000 t of 0.5 inch minus material.

EMPLOYEES Information is not available but the number is expected to be 2 to 3 seasonal.

DEVELOPMENT Material is excavated at Bass River and crushed and sized in Petit Rocher. Plans are to continue the operation depending on market demand and availability.

NATURAL STONE

The quarrying and working of stone for various applications, once an important sector of New Brunswick's mining industry, continues to shown signs of a modest revival. Although there are several companies supplying stone products in the province, only a few actually quarry and process local stone. Both granite and sandstone are worked on demand.

The New Brunswick stone industry today bears no resemblance to that of former decades. Nonetheless, a few companies continue to quarry stone generally on demand in the southern part of the Province, shaping it into monuments, curbing, streetscaping and landscaping stone, stone for new buildings and restoration material. These companies include: Nelson Monuments Ltd. of Sussex, Smith Cut Stone and Quarries Limited of Shediac, Maritime Stone Works Inc. of Scoudouc, Bastarache Stone Quarrie near Notre Dame, and Brunswick Limestone near Hillsborough (Figure 9:15–19).

Brunswick Limestone

Brunswick Limestone, a subsidiary of T. P. Downey & Sons, a local lumber company, is a relatively new enterprise operating in southeastern New Brunsick. Since 2001 the company has been a fabricator and supplier high-quality limestone flagstone from the Hillsborough area (Figure 9: 19), a half-hour drive south of the city of Moncton. Brunswick began examining the production and marketing potential of a local laminated limestone resource in 2000. Starting with the production of simple pit-run material, the company has recently expanded into several rough and cut flagstone and related biulding stone products that are graded on the basis of size, thickness and color. The operation has become more mechanized, utilizing several pieces of sorting and grading equipment. A computerized circular diamond saw and a stone splitter are used to trim stone to specific sizes and shapes. The company has sent stone shipments to the United States and Ontario as well the regional Maritime market.

Maritime Stone Works Inc.

Another notable development in New Brunswick's stone sector during 2002 was the acquisition of a former sandstone quarry site near Quarryville (Figure 9: 17), about 25 km south of Miramichi City in northeastern New Brunswick. Maritime plans on to reopen the deposit and extract some block material in 2003.

MINERAL AGGREGATE

The production of mineral aggregate from bedrock and granular deposits (sand and gravel) is fairly wide-spread throughout New Brunswick (Figure 9: 20–26). Because of a shortage and variability of pit-run material from many granular sources and the increasing costs of processing required to meet tighter construction specifications, there is an increasing preference toward the use of bedrock (crushed rock) as a source of aggregate materials.

Dozens of small companies and independent contractors extract sand and gravel and related materials from numerous pits that, with few exceptions, are operated on an intermittent-demand basis. While many operations produce low-specification pit-run or borrow material, several companies produce good quality material from large deposits. These are more permanent operations that lie within economical trucking distance of high-demand urban areas.

The bulk of the province's crushed rock is produced from ten to fifteen quarries; most are strategically situated near higher-demand centres orareas lacking in quality granular materials.

The 1990s have seen an unprecedented amount of highway and related infrastructure construction in New Brunswick. The present focus on upgrading the Province's major highway system(s) has led to considerable interest in locating and developing sources of high-performance mineral aggregate. Such projects have resulted in the establishment of several new strategically positioned pits and quarries at several locations throughout the province.

Apart from meeting increased requirements for the domestic market, the export of mineral aggregate from New Brunswick tidewater locations began in the mid-1990s and continues to gain momentum as a realistic alternative to resource development. Beginning with shipments of sand into the New York area, aggregate export recently has expanded to include bedrock that has been quarried and processed at an industrial park immediately adjacent the port facility at Bayside in southwestern New Brunswick (see Figure 9). Annual shipments of these materials form a significant part of port traffic at Bayside. Aggregate exports from New Brunswick ports are also being considered by other interests.

HYDROCARBONS

COAL

N.B. Coal Limited

COMPANY N.B. Coal Limited, P.O. Box 520, Minto, New Brunswick E0E 1J0. Telephone: (506) 327-3336. The President is Mr. A. Cormier. The parent company is NB Power.

RIGHTS N.B. Coal Limited holds a Coal Agreement, under the *Mining Act*, Chapter M-4.1, S.N.B, 1985, in the Minto–Chipman area.

LOCATION The Minto-Chipman coalfield (Figure 9:27) is approximately 60 km east-northeast of Fredericton (NTS 21 I/4, 21 J/1).

History (For early history see Miscellaneous Report 13, "New Brunswick's Mineral Industry, 1993.")

RESERVES Current reserve figure is not known.

PRODUCTION 194 000 t of coal (2002); 165 000 t of coal (2001). (Source: Natural Resources Canada)

EMPLOYEES In 2002–2003, an average of 76 persons, not including contract truckers.

DEVELOPMENTS N.B. Coal Limited operates for eight months each year.

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